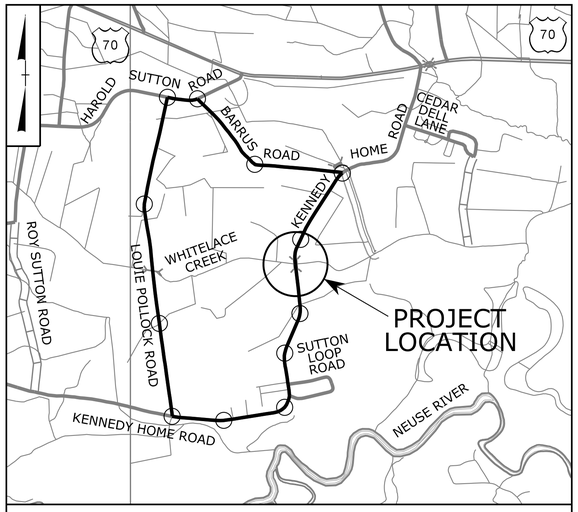
PROJECT: SF-530055

CONTRACT: DB00411

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 For Survey Control Sheet



VICINITY MAP

OFF SITE DETOUR ROUTE

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530055	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.78		PE

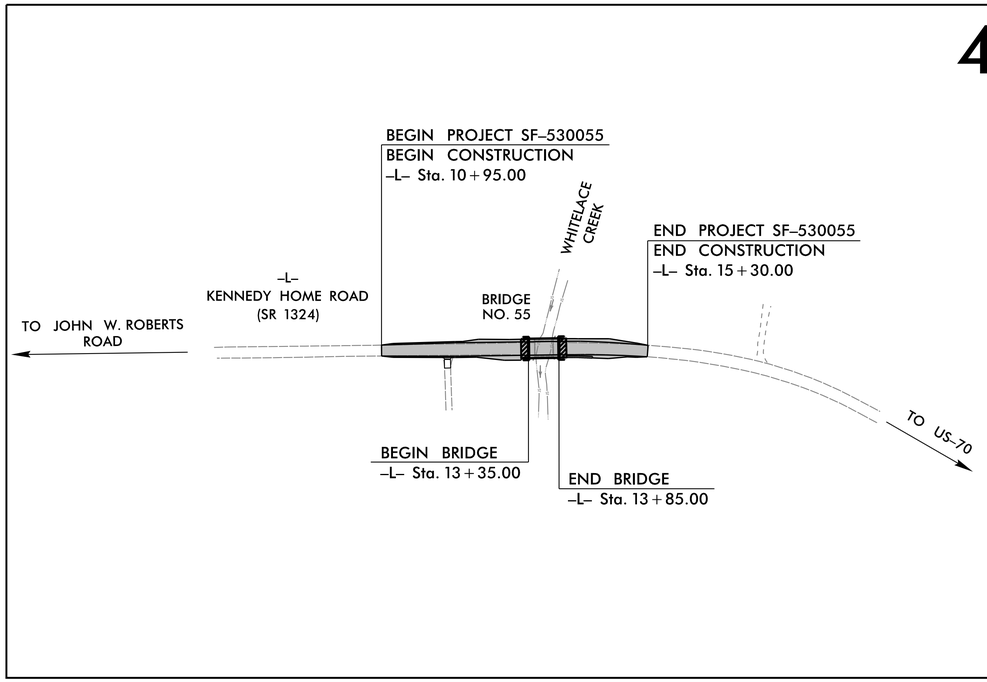
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: *BRIDGE NO. 55 OVER WHITELACE CREEK ON SR 1324 (KENNEDY HOME ROAD)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE*

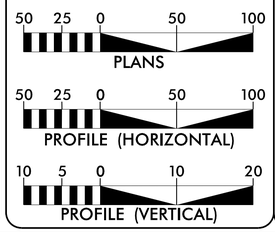
4

NC GRID
NAD 83/NA 2011



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 1700 vpd
ADT 2040 = 4000 vpd

D = 6%
T = 6%
V = 60 MPH

FUNC CLASS =
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.2.R.78 = 0.073 MILES
LENGTH STRUCTURE PROJECT 17BP.2.R.78 = 0.009 MILES
TOTAL LENGTH PROJECT 17BP.2.R.78 = 0.082 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2018
NC LICENSE #P-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 6, 2017

LETTING DATE:
MARCH 28, 2018

ERIN THOMPSON, P.E.
PROJECT ENGINEER

TYLER SPRING, E.I.
PROJECT DESIGN ENGINEER

HEATHER C. LANE, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Larry D Robinson
CE17B2971D5643E...

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.

2/13/2018 *P.E.*

SIGNATURE:

ROADWAY DESIGN ENGINEER

DocuSigned by:
Erin K Thompson
31E6486C94E44F2...

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN KATHLEEN THOMPSON

2/13/2018 *P.E.*

SIGNATURE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Kimley»Horn ©2018
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	1A

RW SHEET NO.

ROADWAY ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER 2/13/2018	NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. 2/13/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

SF-530055
LENOIR COUNTY

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, LIST OF ROADWAY STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS SHEET
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND MISCELLANEOUS DETAILS
3B-1 THRU 3B-2	SUMMARY SHEETS
3D-1	SUMMARY OF DRAINAGE QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-4	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURES PLANS

GENERAL NOTES

2018 SPECIFICATIONS

EFFECTIVE: 01-16-18
REVISED:

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
POWER: TRI-COUNTY EMC: TONY GRANTHAM 919-587-9600 TONY.GRANTHAM@TCEMC.COM
WATER/SEWER: NORTH LENOIR WATER CORPORATION: JEFF HARDISON 252-560-1492 JEFFNLWATER@EMARQMAIL.COM
WATER/SEWER: NEUSE REGIONAL WATER & SEWER: HAROLD HERRING 252-522-2567 HAROLD.HERRING@NRWASA.ORG
TELEPONE: CENTURY LINK: ALONZA MITCHELL 252-256-9633 ALONZA.MITCHELL@CENTURYLINK.COM

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

PAVEMENT MARKING AND DETOUR:

STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND TYPE III BARICADES AT THE PROJECT LIMITS.
STATE FORCES WILL INSTALL PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS ON THE FINAL FINISHED PROJECT.
CALL JEFF DUNNING (252-830-3493) WITH FOUR (4) WEEKS' ADVANCED NOTICE FOR COORDINATION.

EFFECTIVE: 01-16-18
REVISED:

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	1B

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale ****S.U.E. = Subsurface Utility Engineering***

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E.*)
- U/G Water Line LOS C (S.U.E.*)
- U/G Water Line LOS D (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

K:\RAL_Roadway\0I\0I036379 - Bridge55\Roadway\Proj\0I\0I036379_rdy_1shdgn

2/13/2018

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.78	1C-1
Location and Surveys	

PROJECT SURVEYOR

SURVEY CONTROL SHEET 53-0055

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

NAD 83 NC GRID NA 2011

BASELINE

BL

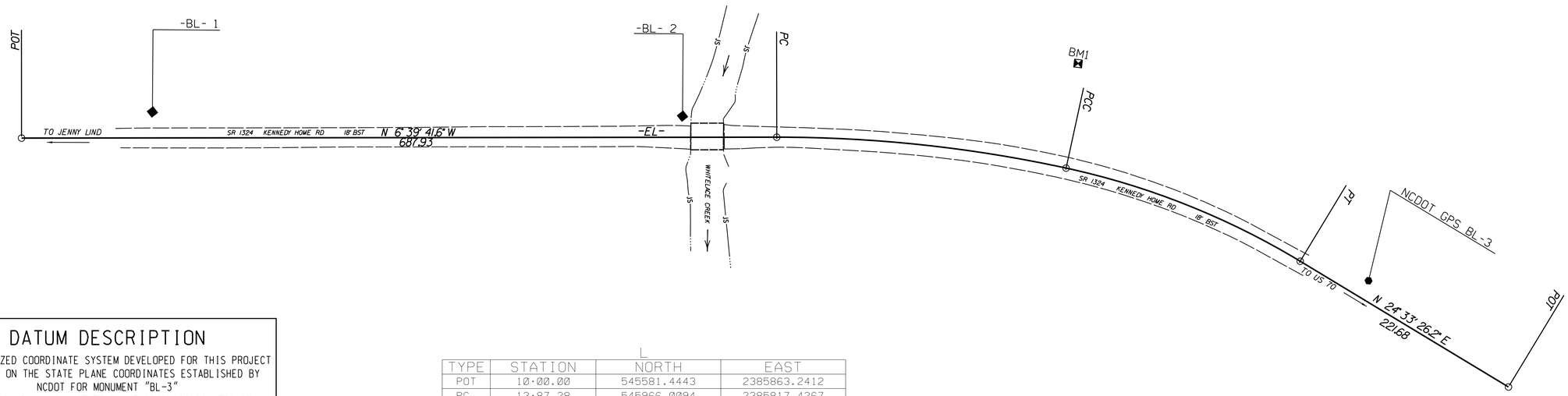
POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	545434.7080	2385856.8140	46.87
2	BL-2	545914.8400	2385805.1510	44.84
3	NCDOT GPS BL-3	546552.8810	2385882.4400	45.36

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	545319.067	2385894.173							
LINE			N 06°39'41.6" W	687.93					
PC	546002.355	2385814.369							
CURVE			N 00°29'44.6" W	265.05	12°19'54.0"(RT)	04°38'36.9"	265.56	133.30	1233.87
PCC	546267.397	2385812.076							
CURVE			N 15°06'49.3" E	229.55	18°53'13.9"(RT)	08°11'26.4"	230.59	116.35	699.52
PT	546489.008	2385871.928							
LINE			N 24°33'26.2" E	221.68					
POT	546690.632	2385964.057							

BENCHMARK

BM1 ELEVATION = 45.90
N 546267 E 2385716
R/R SPIKE SET IN POWER POLE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 546552.881(ft) EASTING: 2385882.440(ft)
ELEVATION: 45.36(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987606
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION 10+95.00 IS
S 1° 59' 14.9" W 877.63'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	545581.4443	2385863.2412
PC	13+87.28	545966.0094	2385817.4267
PCC	16+37.17	546215.4445	2385807.6327
PT	18+94.24	546465.2316	2385862.4830

NOTE: DRAWING NOT TO SCALE

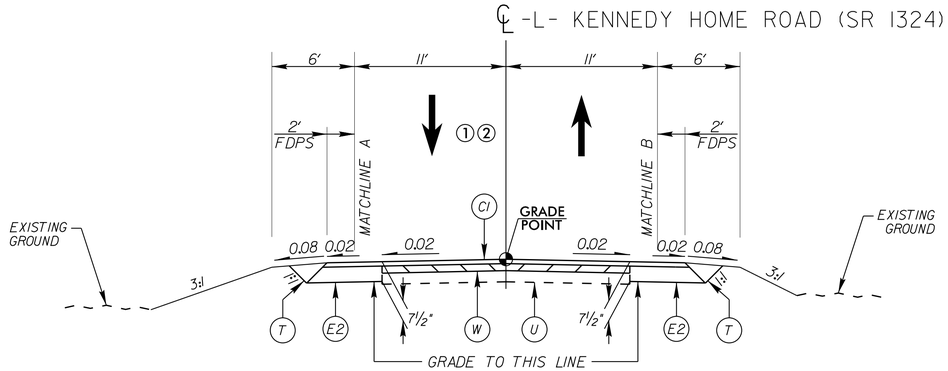
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

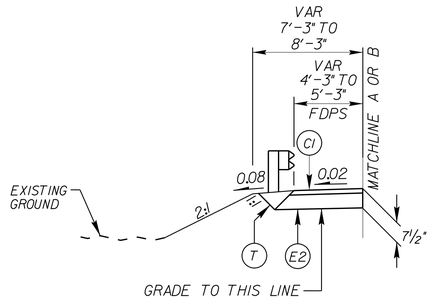
$$$$SYSTIME$$$$ $$$$USERNAME$$$$ $$$$DGN$$$$ $$$$DESIGNSIZE$$$$

REVISIONS



TYPICAL SECTION NO. 1

-L- STA 10+95.00 TO STA 11+70.00
-L- STA 14+40.00 TO STA 15+45.00 ④



TYPICAL SECTION NO. 1A

USE IN CONJUNCTION WITH GUARDRAIL LOCATIONS AS FOLLOWS:

-L- STA 14+40.00 TO 14+66.25 (LT & RT)

NOTES:
1) OVERLAY FROM -L- STA 10+95.00 TO STA 11+70.00 AND FROM -L- STA 14+35.00 TO STA 15+30.00 (1.5" S9.5B)
2) MILL NOTCH TO KEY-IN S9.5B FROM -L- STA 10+95.00 TO STA 11+20.00 AND -L- STA 15+05.00 TO STA 15+30.00
3) PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
4) SEE INSETS FOR EXCEPTIONS TO TYPICAL SECTIONS
5) TRANSITION FULL DEPTH SHOULDERS IN AREAS OF 8:1 TAPERS.

Kimley»Horn ©2018
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-5300S5	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER EVAN ALTMAN ALLEN

DocuSigned by: Evan Allen 31E6486C94E44F2...

2/13/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY W. ROBINSON, JR.

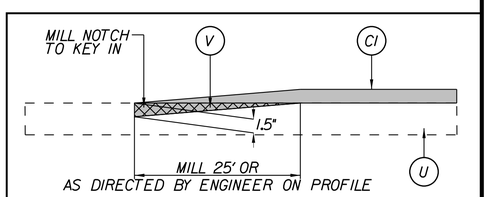
DocuSigned by: Larry Robinson CE17B2971D5643E...

2/13/2018

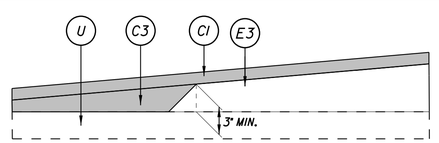
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH
R	PROP. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT 0" TO 1.5" (SEE DETAIL BELOW)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL BELOW)



PROFILE KEY-IN DETAIL

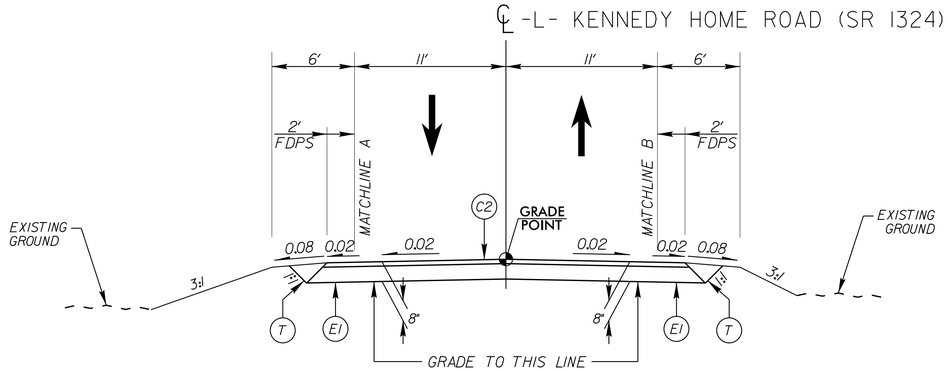


WEDGING DETAIL FOR RESURFACING

K:\RAL_Roadway\011036379 - Bridge55\Roadway\Pro\011036379_rdy_typ.dgn

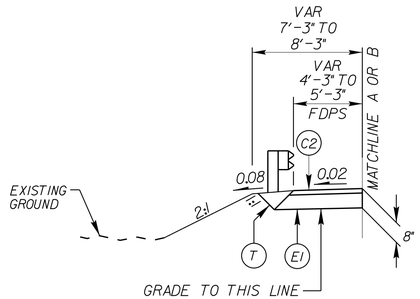
2/13/2018

REVISIONS



TYPICAL SECTION NO. 2

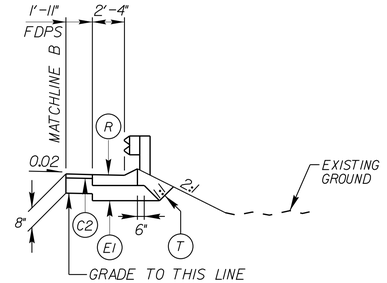
-L- STA 11+70.00 TO STA 13+35.00 (BEGIN BRIDGE) (4)
-L- STA 13+85.00 (END BRIDGE) TO STA 14+40.00 (4)



TYPICAL SECTION NO. 2A

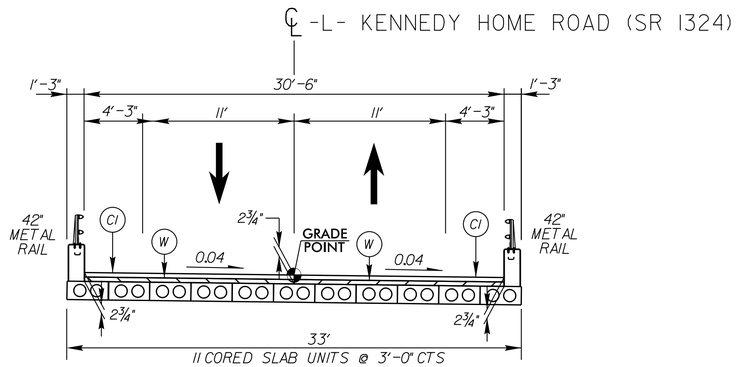
USE IN CONJUNCTION WITH GUARDRAIL LOCATIONS AS FOLLOWS:

-L- STA 12+53.75 TO STA 13+35.00 (LT & RT)
-L- STA 13+85.00 TO STA 14+40.00 (LT)



TYPICAL SECTION NO. 2B

-L- STA 13+97.00 TO STA 14+40.00 (RT)



BRIDGE TYPICAL SECTION NO. 3

-L- STA 13+35.00 TO STA 13+85.00

NOTES:
1) OVERLAY FROM -L- STA 10+95.00 TO STA 11+70.00 AND FROM -L- STA 14+35.00 TO STA 15+30.00 (1.5" S9.5B)
2) MILL NOTCH TO KEY-IN S9.5B FROM -L- STA 10+95.00 TO STA 11+20.00 AND -L- STA 15+05.00 TO STA 15+30.00
3) PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
4) SEE INSETS FOR EXCEPTIONS TO TYPICAL SECTIONS
5) TRANSITION FULL DEPTH SHOULDERS IN AREAS OF 8:1 TAPERS.

FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH
R	PROP. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT 0" TO 1.5" (SEE DETAIL, SHEET 2A-1)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL, SHEET 2A-1)

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RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-5300055	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN M. THOMSON
Docusigned by: Erin M. Thomson 31E6486C94E44F2...
2/13/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
Docusigned by: Larry D. Robinson, Jr. CE1TB2971D5643E...
2/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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2/13/2018

COMPUTED BY: TGS DATE: 11/07/17
CHECKED BY: EKT DATE: 11/07/17

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	3B-1

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RALEIGH, NC 27601

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	EXCAVATION		EMBANKMENT	BORROW	WASTE
		TOTAL UNCLASSIFIED	UNDERCUT	EMBANKMENT +25%		TOTAL
-L- 10+95	-L- 13+23	3		369	366	
-L- 13+85	-L- 15+30	30		213	183	
	SUBTOTAL	34		582	549	
	SHOULDER MATERIAL			14	14	
	PROJECT TOTAL	34		596	563	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT					28	
	GRAND TOTAL	34			591	
	SAY	40			600	

NOTE: APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

2/13/2018 K:\RAL_Roadway\0I10356379 - Bridge55\Roadway\Pro\0I10356379_rdy_sumdgn

COMPUTED BY: TGS DATE: 11/06/17
CHECKED BY: EKT DATE: 11/06/17

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	3B-2

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RALEIGH, NC 27601

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		ANCHORS				IMPACT ATTENUATOR TL-3						REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END	GREU TL-3	TEMP GREU TL-3	TYPE III	TEMP TYPE III	EA	G	NG				
-L-	12+53.75	13+35.00	LT	81.25				13+35.00	1		1								
-L-	12+92.75	13+35.00	RT	0			13+35.00								1				
-L-	13+85.00	14+65.75	LT	81.25			13+85.00		1		1								
-L-	13+85.00	14+66.75	RT	81.25				13+95.00	1		1								
			SUBTOTAL	243.75															
	LESS ANCHOR DEDUCTIONS																		
	GREU TL-3	3 @ 50'	=	150.00															
	TYPE III	3 @ 18.75'	=	56.25															
			TOTAL	37.5					3		3								
			SAY	37.5															

ADDITIONAL GUARDRAIL POSTS = 0 EA

SUMMARY OF SHOULDER BERM GUTTER			
LINE	STATION TO STATION	LOCATION	LENGTH (LF)
-L-	13+97 TO 14+40	RT	43
TOTAL			43
SAY			50

NOTE: APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

K:\RAL_Roadway\0I10363 79 - Bridge55\Roadway\Pro\0I10363 79_rdy_sum.dgn
2/13/2018

DD85622

COMPUTED BY:	HCB	DATE:	9/21/2017
CHECKED BY:	LDR	DATE:	9/21/2017

PROJECT NO.	SHEET NO.
11036379	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
L 14+00	14 RT	0403		45.6			
		0403	0402		42.8	42.4	
L 14+35	15 RT	0402		45.2			
		0402	0401		42.4	39.9	
SHEET TOTALS							
PROJECT TOTALS							

Row	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)
L 14+00																						
0403–0402																						
L 14+35																						
0402–0401																						
SHEET TOTALS																						
PROJECT TOTALS																						

Row	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
L 14+00																
0403–0402										32						
L 14+35																
0402–0401										24						
SHEET TOTALS										56						
PROJECT TOTALS										56						

Row	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05
L 14+00				1								
0403–0402												
L 14+35				1								
0402–0401												
SHEET TOTALS				2								
PROJECT TOTALS				2								

Row	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST C.B.	ADJUST D.I.	ADJUST M.H.	PREFORMED SCOUR HOLE (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 14+00									1																		
0403–0402																											
L 14+35									1																		
0402–0401																											
SHEET TOTALS									2																		
PROJECT TOTALS									2																		

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	4
RW SHEET NO.	
ROADWAY ENGINEER	HYDRAULICS ENGINEER

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN KATHLEEN THOMSON 2/13/2018

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. 2/13/2018

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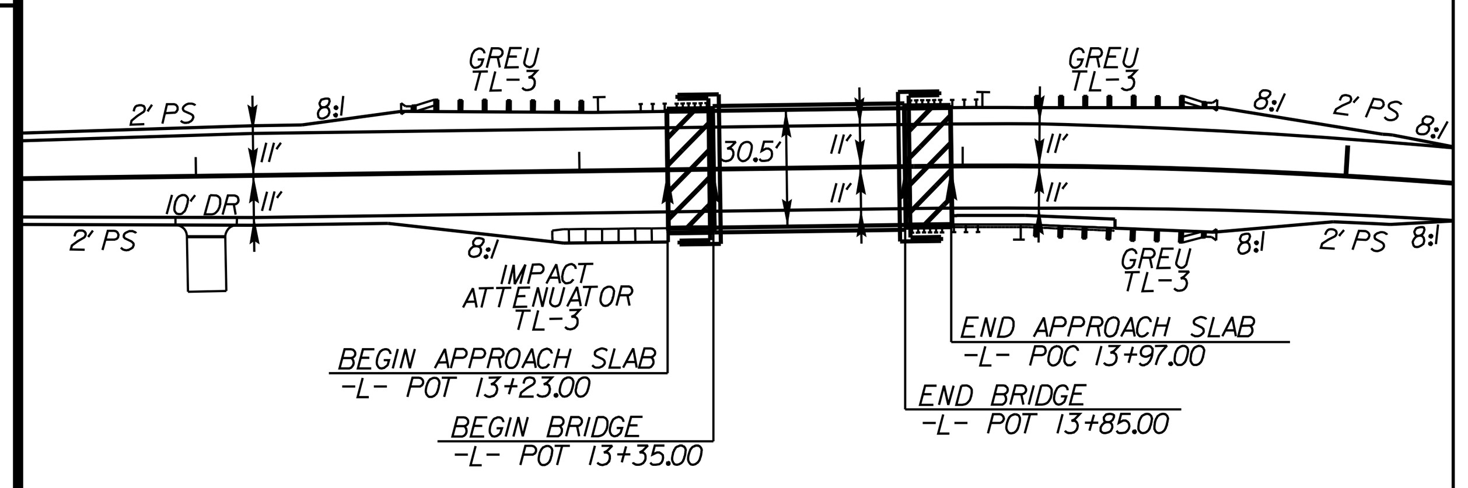
-L-

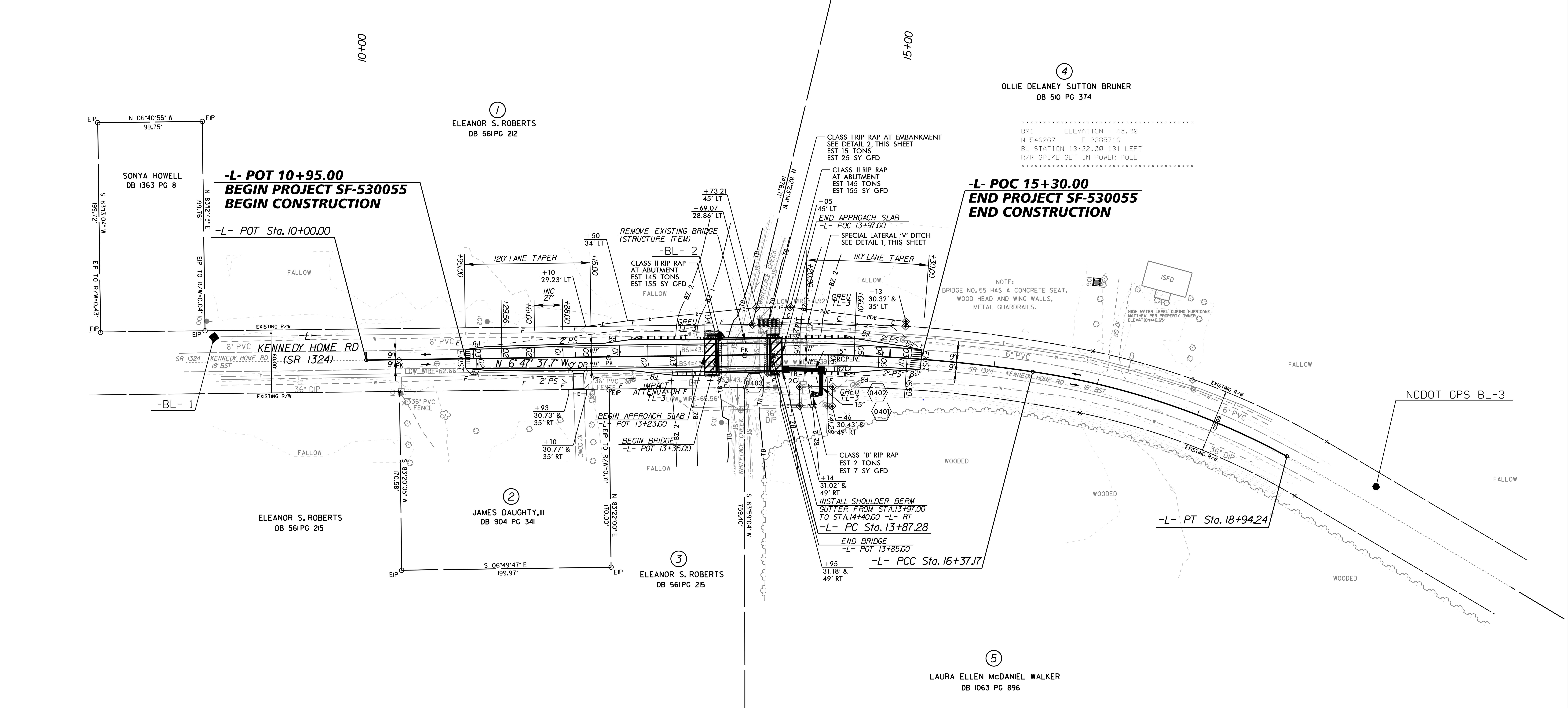
PI Sta 15+12.49	PI Sta 17+67.05
Δ = 9° 05' 25.9" (RT)	Δ = 20° 10' 34.8" (RT)
D = 3° 38' 16.2"	D = 7° 50' 55.5"
L = 249.89'	L = 257.06'
T = 125.21'	T = 129.88'
R = 1,575.00'	R = 730.00'

NC GRID NAD 83/NA 2011

REVISIONS



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

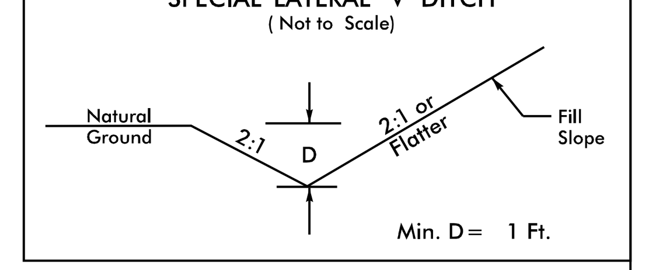


DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 546552.881(ft) EASTING: 2385882.440(ft)
ELEVATION: 45.36(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987606
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

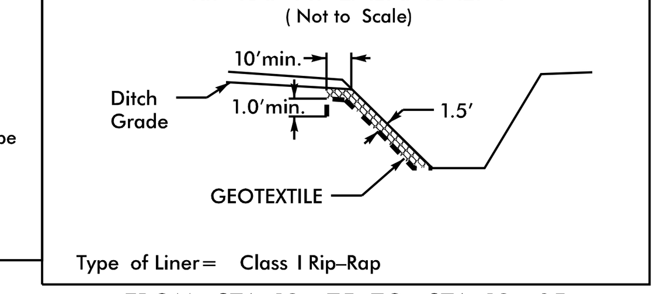
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 13+85 TO STA. 15+00

DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)



FROM STA. 13+75 TO STA. 13+95

SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-X FOR STRUCTURE PLANS

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PROJECT REFERENCE NO.	SHEET NO.
SF-530055	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER — 2/13/2018
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. — 2/13/2018

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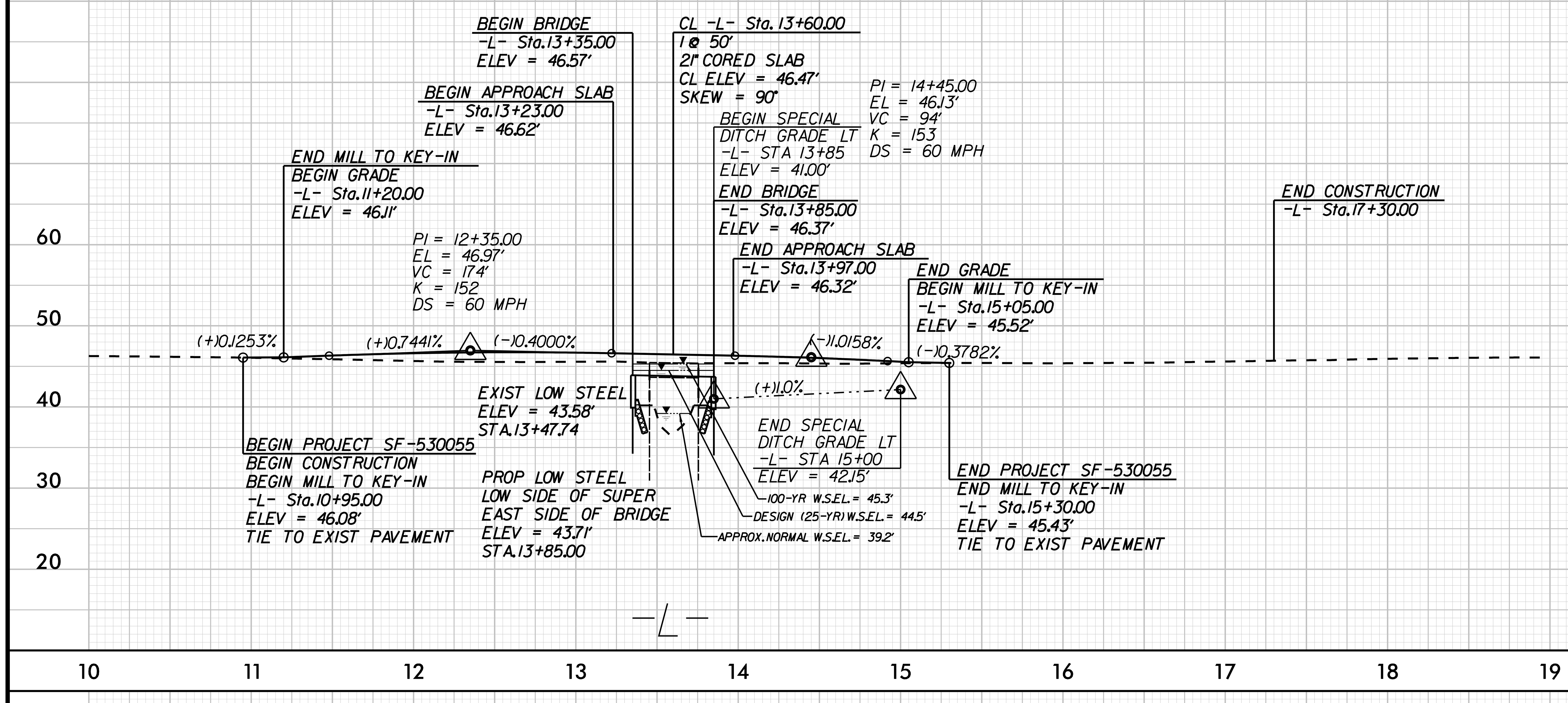
BM #1
-L- STA 13+22.00 (131' LT)
ELEV 45.90'
R/R SPIKE IN POWER POLE

REVISIONS



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 740 CFS
DESIGN FREQUENCY	= 25 YR
DESIGN HW ELEVATION	= 44.5 FT
BASE DISCHARGE	= 1120 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 45.3 FT
OVERTOPPING DISCHARGE	= 1300 CFS
OVERTOPPING FREQUENCY	= X>100 YR
OVERTOPPING ELEVATION	= 45.7
DATE OF SURVEY	= 05/10/2017
W.S.ELEVATION AT DATE OF SURVEY	= 39.25 FT

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2/13/2018

PROJ. REFERENCE NO.	SHEET NO.
SF-530055	TMP-1

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

MANAGEMENT STRATEGIES

CONSTRUCTION SUMMARY:
PROPOSED BRIDGE REPLACEMENT WILL BE CONSTRUCTED AWAY FROM TRAFFIC USING A ROAD CLOSURE AND DETOUR ROUTE.

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

C) PROVIDE PERMANENT SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

D) PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTES AS SHOWN IN THE TRAFFIC CONTROL PLANS.

E) COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

F) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

G) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

H) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

PHASING

STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, AND SHEET TMP-2, PERFORM THE FOLLOWING:

- INSTALL ALL ROAD CLOSURE AND DETOUR SIGNING, INCLUDING BARRICADES
- IMPLEMENT A TEMPORARY CLOSURE OF SR 1324 (KENNEDY HOME RD) USING A DETOUR ALONG SR 1335 (LOUIE POLLOCK RD), SR 1330 (HARROLD SUTTON RD), AND SR 1336 (BARRUS RD). ALLOW LOCAL TRAFFIC ACCESS ALONG SR 1324 (KENNEDY HOME RD) TO APPROXIMATELY 0.06 MILES NORTH AND 0.03 MILES SOUTH OF BRIDGE #55 (JUST AFTER THE FINAL DRIVEWAYS PRIOR TO THE BRIDGE.)

STEP 2: REMOVE EXISTING BRIDGE #55 AND CONSTRUCT THE PROPOSED BRIDGE AND APPROACHES AS SHOWN IN THE CONSTRUCTION PLANS.

STEP 3: INSTALL ALL FINAL PAVEMENT MARKINGS.

STEP 4: REMOVE ALL TRAFFIC CONTROL SIGNING AND DEVICES AND OPEN SR 1324 (KENNEDY HOME RD) TO THE FINAL TRAFFIC PATTERN.

NOTE:
STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND TYPE III BARRICADES AT THE PROJECT LIMITS. STATE FORCES WILL REMOVE AND INSTALL PAVEMENT MARKINGS, PERMANENT RAISED PAVEMENT MARKERS, AND SIGNING ON THE FINAL FINISHED PROJECT. CALL JEFF DUNNING (252-830-3493) WITH FOUR (4) WEEKS' ADVANCED NOTICE FOR COORDINATION.

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, North Carolina 27601

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN KATHLEEN THOMPSON

DocuSigned by: Erin K Thompson 2/13/2018

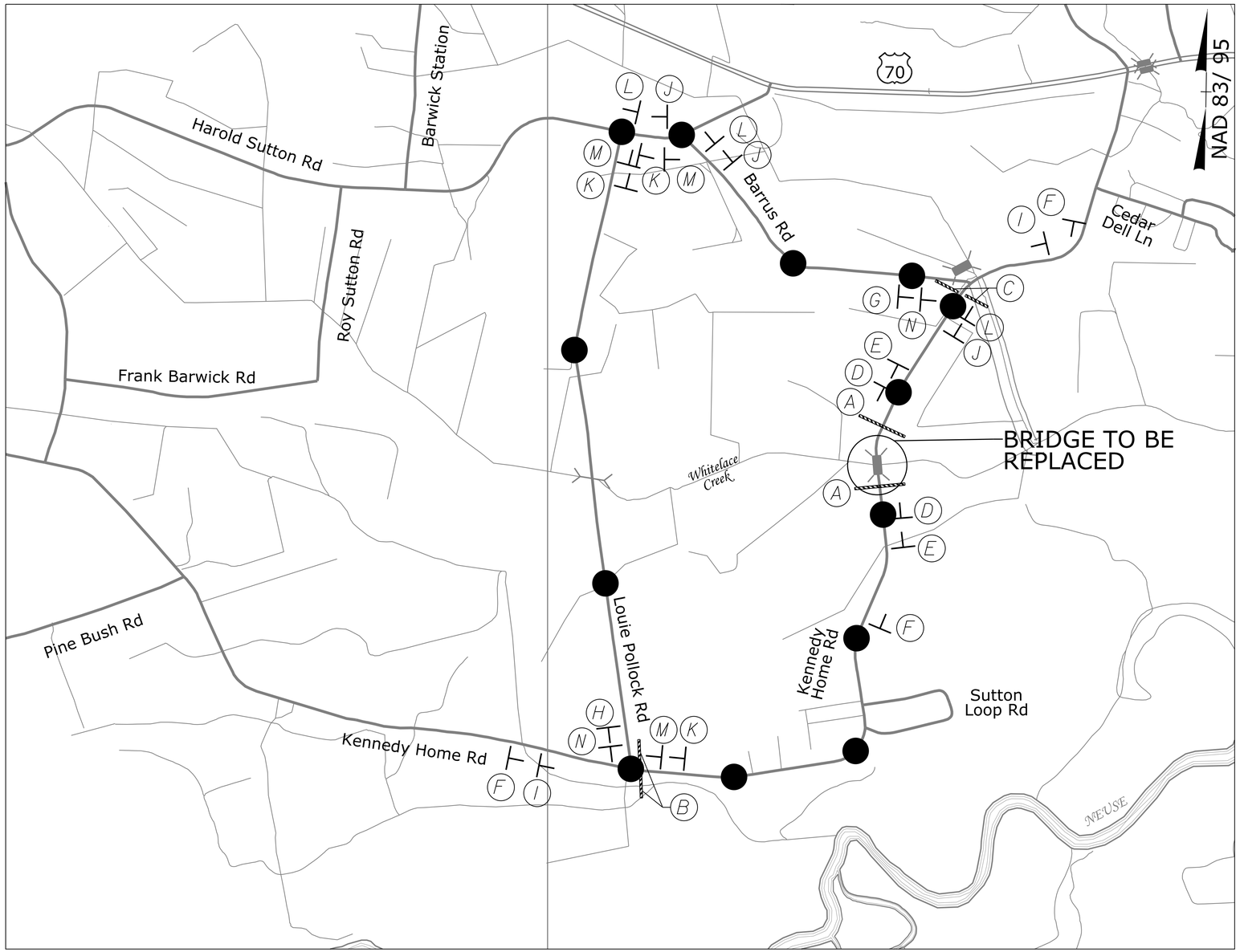
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

K:\RAL_Roadway\OII\036379 - Bridge55\Traffic\Traffic Control\TCP\TMP01.dgn

2/13/2018

PROJ. REFERENCE NO.	SHEET NO.
SF-530055	TMP-2



SCALE: 1" = 1000'

(A) R11–2 48" X 30" — ROAD CLOSED — TYPE III BARRICADE(S)

(B) R11-4 60" x 30" — ROAD CLOSED TO THRU TRAFFIC — DETOUR — M4-10L 48" x 18" — TYPE III BARRICADE

(C) R11-4 60" x 30" — ROAD CLOSED TO THRU TRAFFIC — DETOUR — M4-10R 48" x 18" — TYPE III BARRICADE

(D) ROAD CLOSED 500 FT — W20–3B 48" X 48"

(E) ROAD CLOSED 1000 FT — W20–3C 48" X 48"

(F) ROAD CLOSED AHEAD — W20–3A 48" X 48"

(G) ROAD CLOSED AHEAD — W20–3A 48" X 48" — NEXT RIGHT — SP–4R 42" X 12"

(H) ROAD CLOSED AHEAD — W20–3A 48" X 48" — NEXT LEFT — SP–4L 42" X 12"

(I) DETOUR AHEAD — W20–2 48" X 48"

(J) DETOUR — M4–8 24" X 12" — M5–1 M 21" X 15"

(K) DETOUR — M4–8 24" X 12" — M5–1 R 21" X 15"

(L) DETOUR — M4–8 24" X 12" — M6–1 L 21" X 15"

(M) DETOUR — M4–8 24" X 12" — M6–1 21" X 15"

(N) END DETOUR — M4–8 A 24" X 18"

NOTE:
REFER TO RSD 1101.03 SHEET 1 OF 9 FOR ADVANCE WARNING SIGNAGE AND BARRICADE PLACEMENT

LEGEND
DETOUR ROUTE
STATIONARY SIGN

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, North Carolina 27601
© , 2018 PE NO. F-0102

APPROVED: _____ DATE: _____

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN MATHLEEN THOMPSON
DocuSigned by: Erin K Thompson 2/13/2018

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

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2/13/2018

PROJECT: SF–530055

CONTRACT:

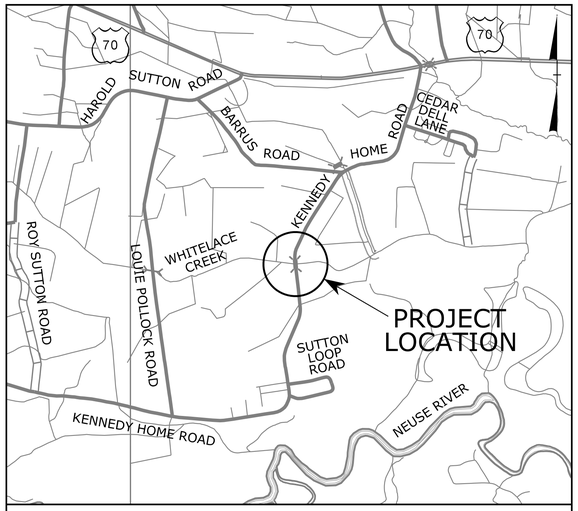
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530055	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.78		

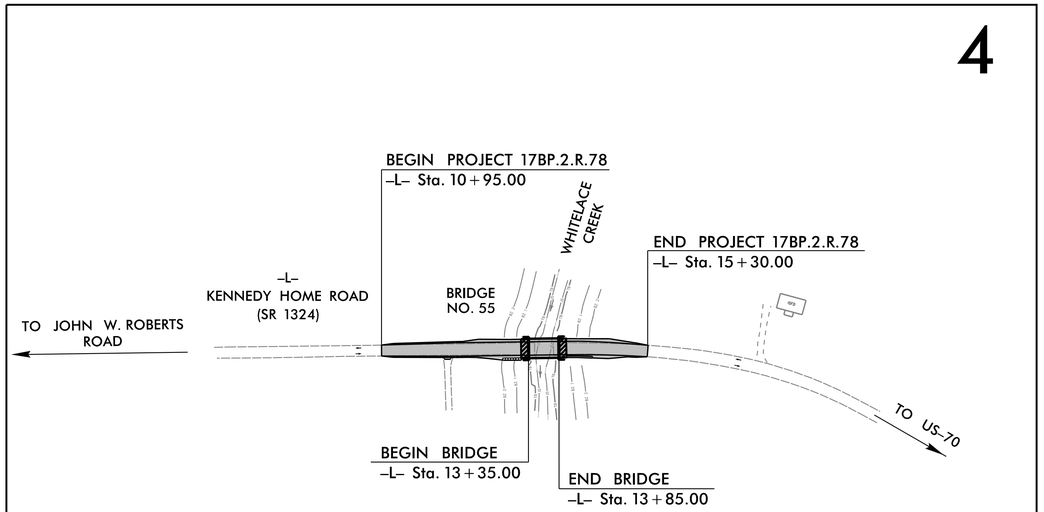
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



VICINITY MAP

LOCATION: ***BRIDGE NO. 55 OVER WHITELACE CREEK ON SR 1324 (KENNEDY HOME ROAD)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, AND STRUCTURE***



NC GRID
NAD 83/NA 2011

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

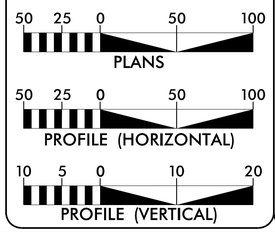
ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2018 STANDARD SPECIFICATIONS

Erin Thompson
LEVEL IIIA NAME

4031
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALES



ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2018
NC LICENSE #F-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 6, 2017

LETTING DATE:
FEBRUARY 28, 2018

ERIN THOMPSON, P.E.
PROJECT ENGINEER

TYLER SPRING, E.I.
PROJECT DESIGN ENGINEER

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin for Pumped Effluent	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

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2/13/2018

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	EC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

EROSION CONTROL PLAN

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

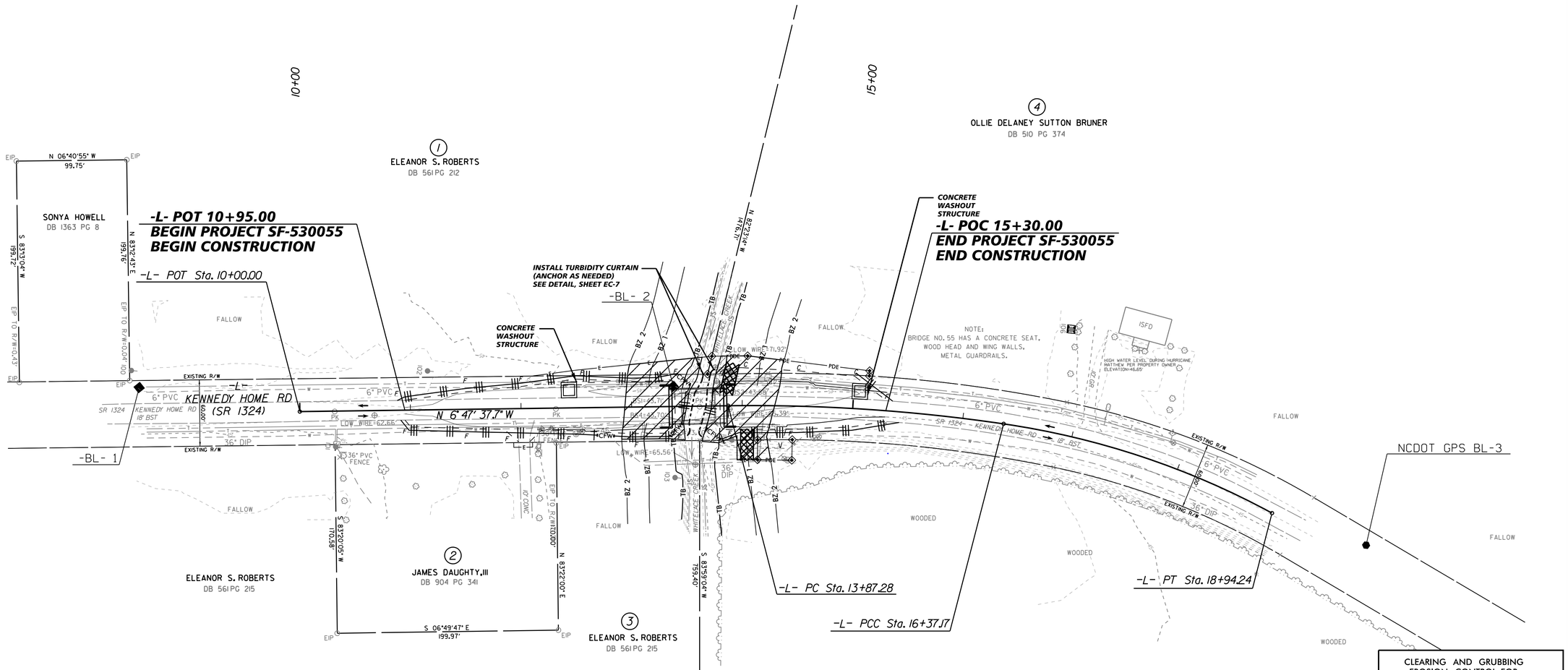
RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	EC-3
R/W SHEET NO.	CONST. 4

REVISIONS

NC GRID
NAD 83/NA 2011



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 546552.881(ft) EASTING: 2385882.440(ft)
ELEVATION: 45.36(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987606
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

2/13/2018 K:\RAL_Roadway\011036379 - Bridge55\Roadway\Proj\011036379_rdy_ero_psh_3.dgn

EROSION CONTROL PLAN

Kimley»Horn ©2018
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

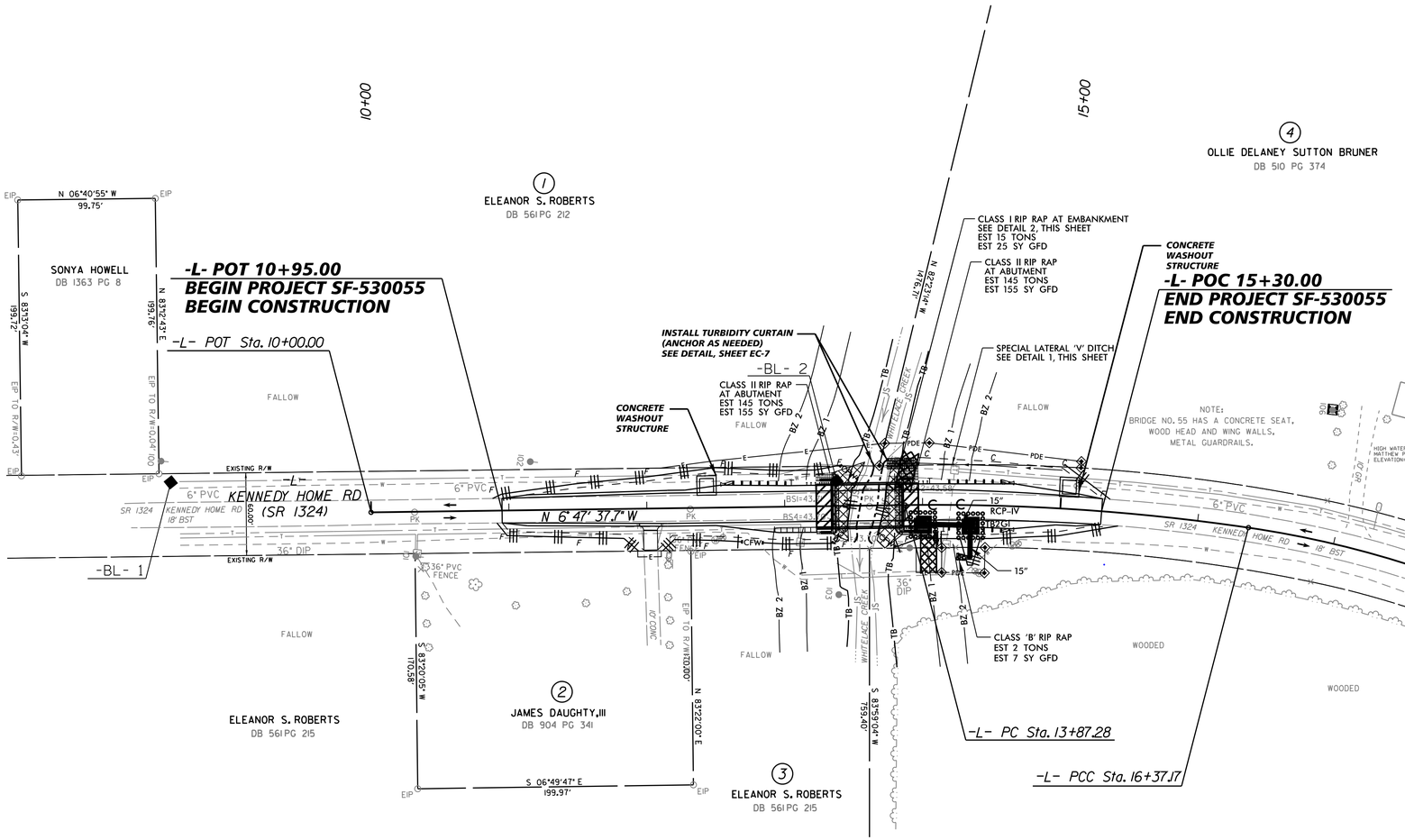
RIGHT-OF-WAY REV.

CONST. REV.

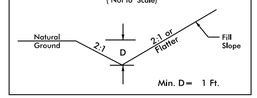
PROJECT REFERENCE NO.	SHEET NO.
SF-530055	EC-4
R/W SHEET NO.	CONST. 4

REVISIONS

NC GRID
NAD 83/NA 2011

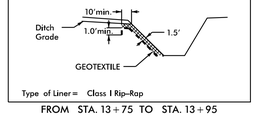


DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 13+85 TO STA. 15+00

DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)



FROM STA. 13+75 TO STA. 13+95

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

BRIDGE APPROACH SLAB

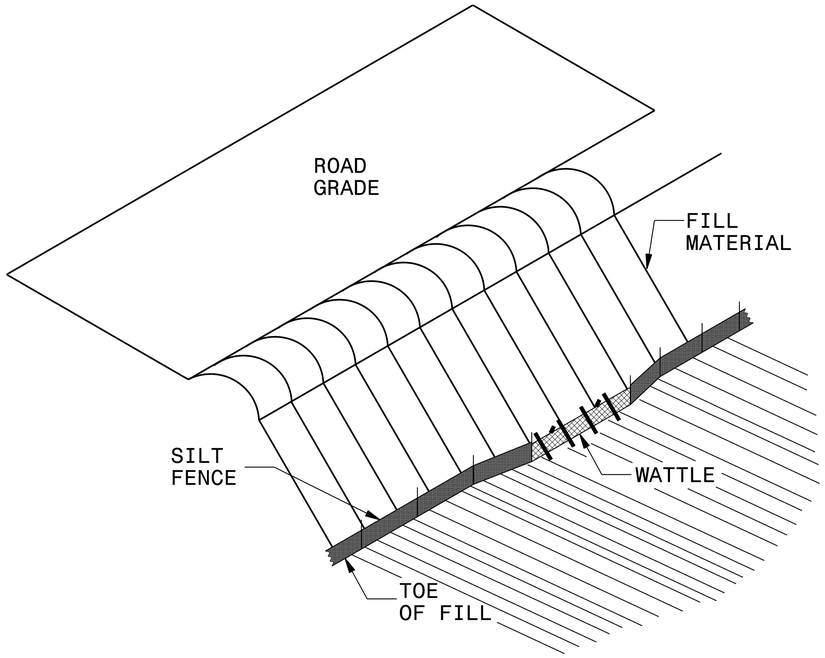
EXIST RDWY. FILL EXCAVATION

CLASS II RIP RAP

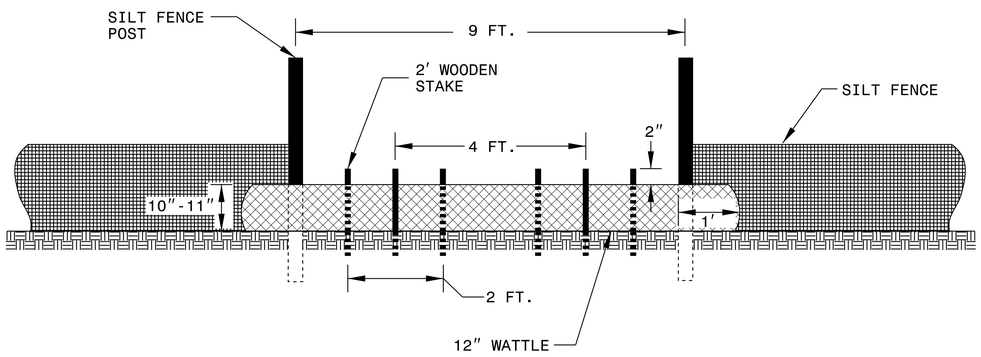
2/13/2018 K:\RAL_Roadway\DII036379 - Bridge55\Roadway\Proj\DII036379_rdy_ero_psh_4.dgn

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	EC-5
R/W SHEET NO.	

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

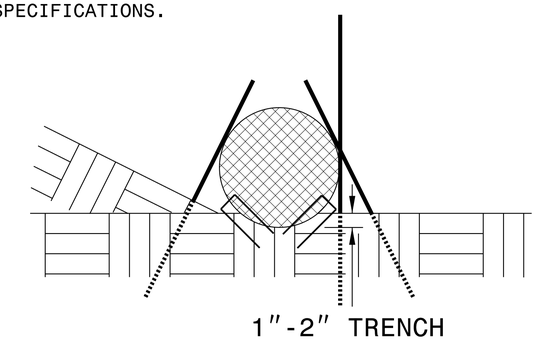
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

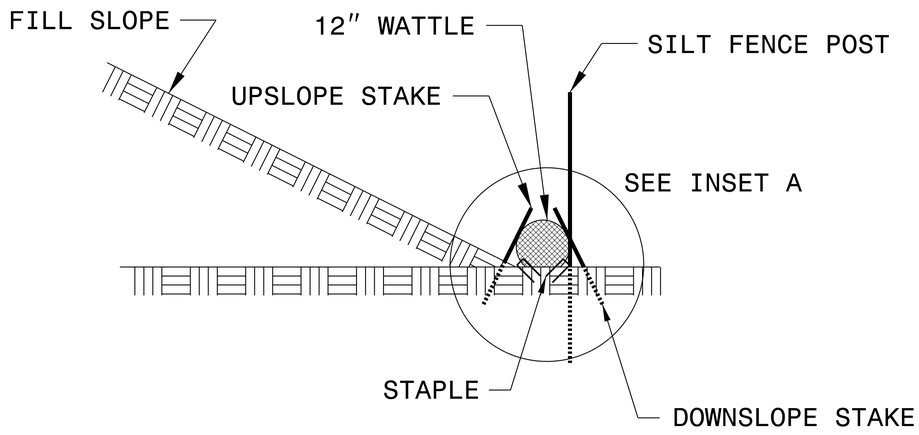
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	EC-6

FLOATING TURBIDITY CURTAIN

USE THIS DEVICE FOR CONSTRUCTION OF THE PROPOSED BULKHEADS WITHIN THE EXISTING WATERWAY.

MATERIAL AND INSTALLATION REFERENCES:

NCDOT - "BMP'S FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES"
(AUGUST 2003, PAGES 74 AND 75)
SECTION 5.2.5 "TURBIDITY CURTAIN"
(http://www.ncdot.org/doh/operations/BMP_manual/download/BMP_Manual.pdf)

NCDOT SPECIAL PROVISION -
"FLOATING TURBIDITY CURTAIN"
(http://www.ncdot.org/doh/operations/dp_chief_eng/roadside/soil_water/pdf/FloatingTurbidityCurtain.pdf)

FLOATING TURBIDITY CURTAIN:

Description
This work consists of furnishing a Floating Turbidity Curtain to deter silt suspension and movement of silt particles during construction. The floating turbidity curtain shall be constructed at locations as directed.

Materials
The curtain material shall be made of a tightly woven nylon, plastic or other nondeteriorating material meeting the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs *cd-250 lbs
Mullen burst stength	480 psi
Trapezoid tear strength	*md-100 lbs *cd-60 lbs
Apparent opening size	70 US standard sieve
Percent open area	4% permittivity 0.28 sec-1

*md - machine direction
*cd - cross machine direction

In the event that more than one width of fabric is required, a 6" overlap of the material shall also be required.
The curtain material shall be supported by a flotation material having over 29 lbs/ft buoyancy. The floating curtain shall have a 5/16" galvanized chain as ballast and dual 5/16" galvanized wire ropes with a heavy vinyl coating as load lines.

Construction Methods
The Contractor shall maintain the Floating Turbidity Curtain in a satisfactory condition until its removal is requested by the Engineer. The curtain shall extend to the bottom of the jurisdictional resource. Anchor the curtain according to manufacturer recommendations.

Measurement and Payment
Floating Turbidity Curtain will be measured and paid for as the actual number of square yards of curtain furnished as specified and accepted. Such price and payment will be full compensation for the work as described in this section including but not limited to furnishing all materials, tools, equipment, and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Floating Turbidity Curtain	Square Yard

5.2.5 Turbidity Curtain

Purpose

Used as instream erosion control filtration device to isolate the streambank work from the normal flow of the stream. This device is normally used in open waters for containment in work zones. May also be used across channels with very low flow for short-term work when anchored properly.

Figure 33. Turbidity Curtain

Conditions Where Practice Applies

- ✓ When performing work on a stream bank in a small localized area.
- ✓ When the repair or construction activities will not require an extended period of time to complete.

Conditions Where Practice Does Not Apply

- ✓ Across flowing streams. Turbidity curtains are not designed as prefabricated dams.

Construction

The curtain should be made of a tightly woven nylon, plastic or other non-deteriorating material. The material shall meet the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs. (1.65 Kn) *cd-250 lbs. (1.11 Kn)
Mullen burst strength	480 psi (3307 kpa)
Trapezoid tear strength	*md-100 lbs. (0.45 Kn) *cd-60 lbs. (0.27 Kn)
Apparent opening size	70 us standard sieve (0.210 mm)
Percent open area	4% permittivity 0.28 sec-1

*md – machine direction
*cd – cross machine direction

- A flotation material with over 29 lbs./ft. (43 kg/m) buoyancy shall support the curtain material. A 5/16 inch (7.8 mm) galvanized chain shall act as ballast for the floating curtain. Dual 5/16 inch (7.8 mm) galvanized wire ropes with a heavy vinyl coating shall be used as the load lines.

Maintenance

- Inspect the curtain, flotation and ballast to ensure the work area is securely partitioned from the stream flow.
- Remove accumulated sediment and debris.

Typical Problems

- Does not permanently remove sediment.
- Improper anchoring of curtain on channel bottom.
- Tidal flows requiring frequent repositioning

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	RF-1

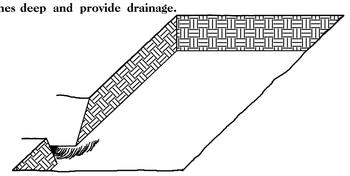
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530055	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

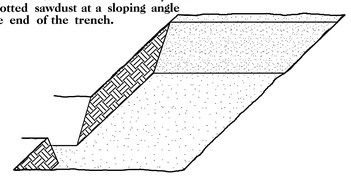
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

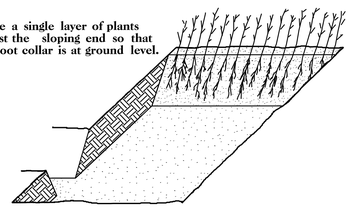
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



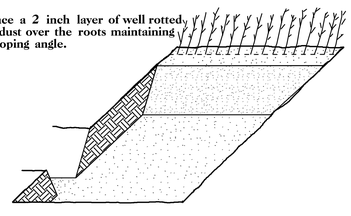
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

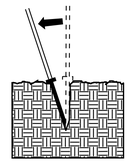


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

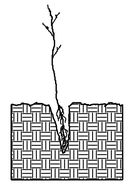


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

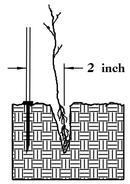
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



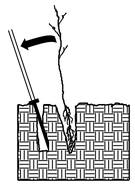
1. Insert planting bar as shown and pull handle toward planter.



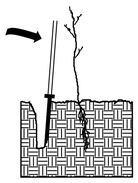
2. Remove planting bar and place seedling at correct depth.



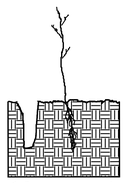
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

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2/13/2018

PROJECT: SF-530055

CONTRACT:

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2/13/2018

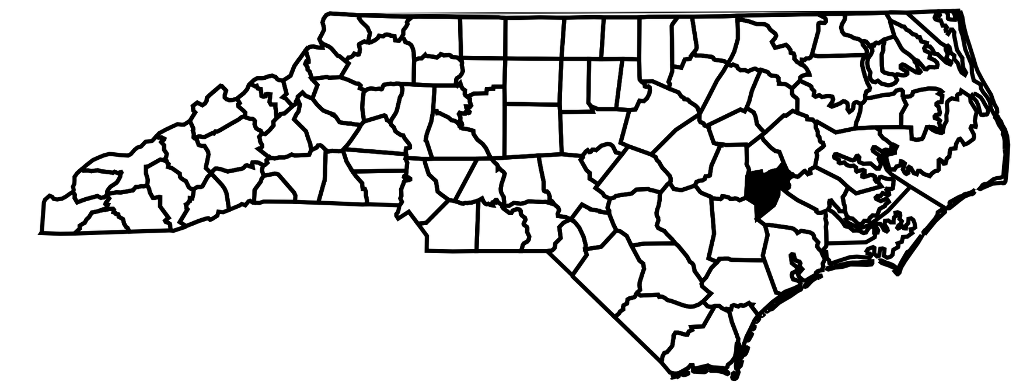
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

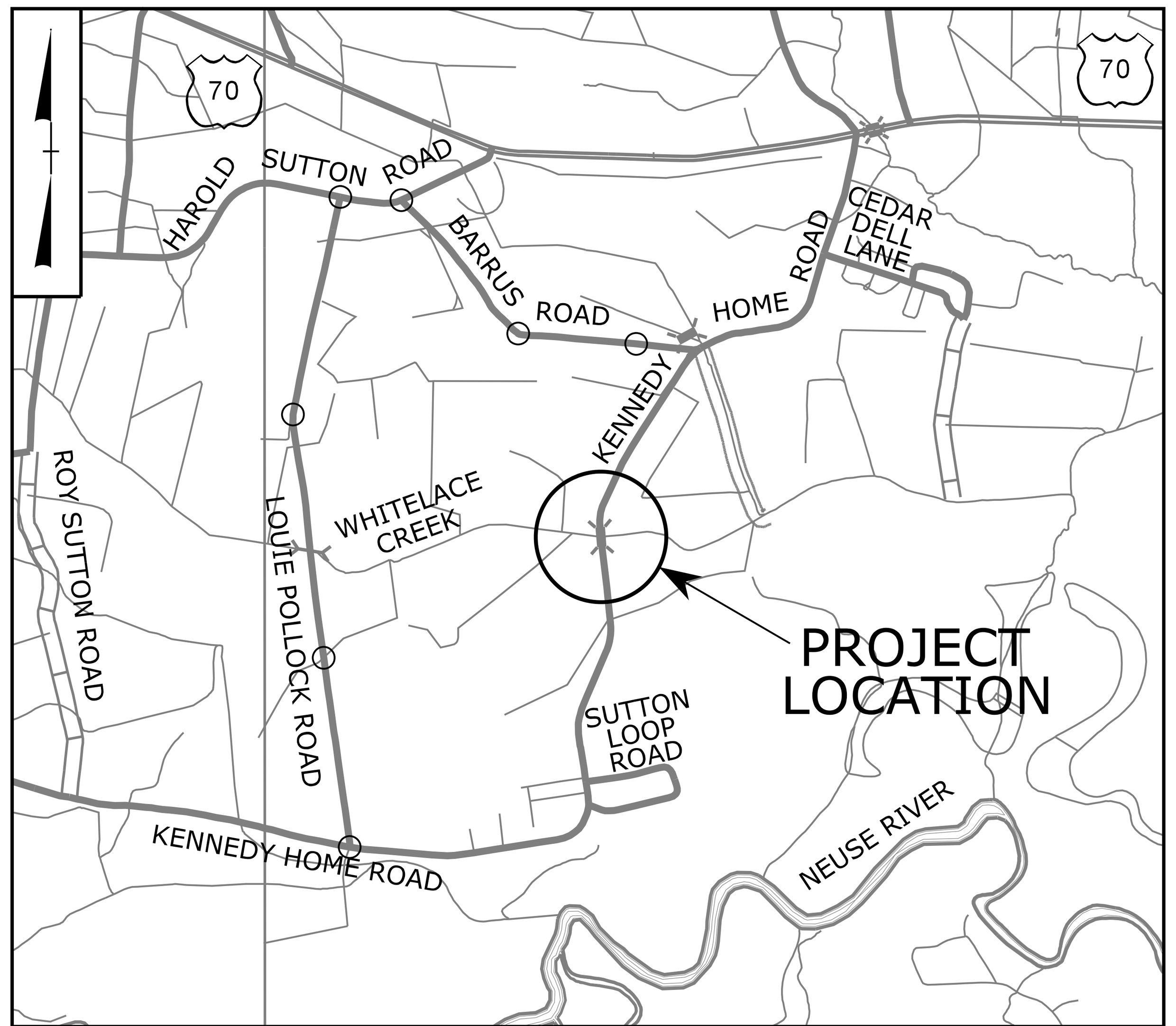
STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	SF-530055	UO-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.78			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY



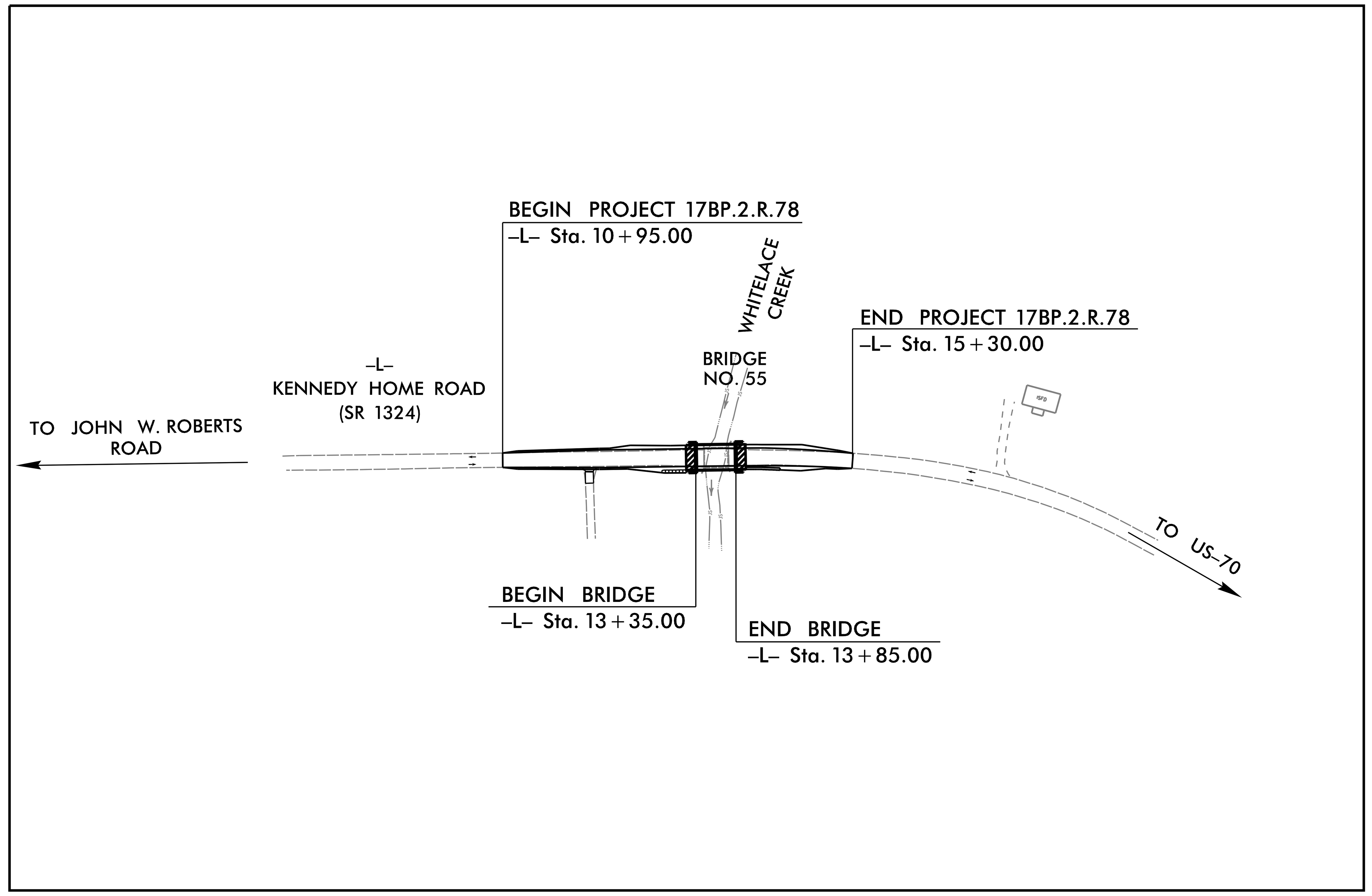


VICINITY MAP

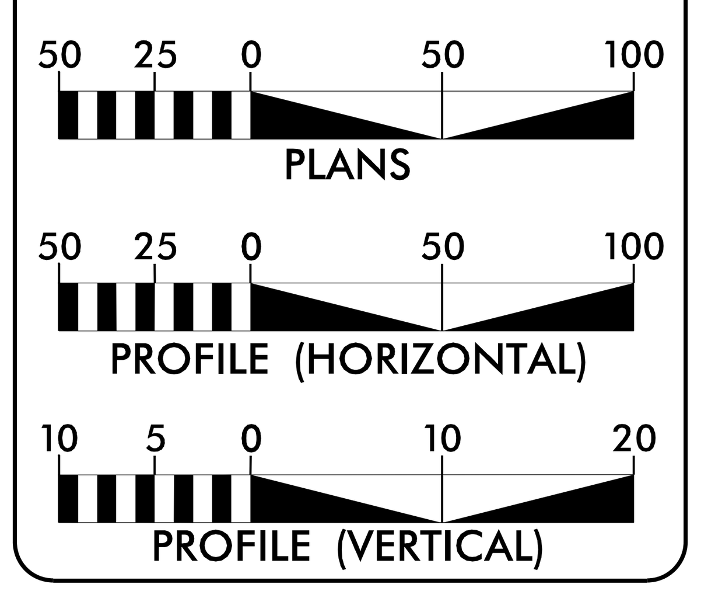
OFF SITE DETOUR ROUTE

LOCATION: ***BRIDGE NO. 55 OVER WHITELACE CREEK ON SR 1324 (KENNEDY HOME ROAD)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, AND STRUCTURE***



GRAPHIC SCALES



INDEX OF SHEETS

UTILITY OWNERS ON PROJECT

(1) TRI-COUNTY EMC (POWER)
(2) NORTH LENOIR WATER CORPORATION (WATER)
(3) NEUSE REGIONAL WATER AND SEWER AUTHORITY (WATER)
(4) CENTURY LINK (PHONE)

UTILITY PLANS BY:

NCDOT PROJECT ENGINEER:
HEATHER C. LANE, P.E.
PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION BRIDGE PROGRAM
DIVISION 2

CONTACT INFORMATION FOR UTILITIES

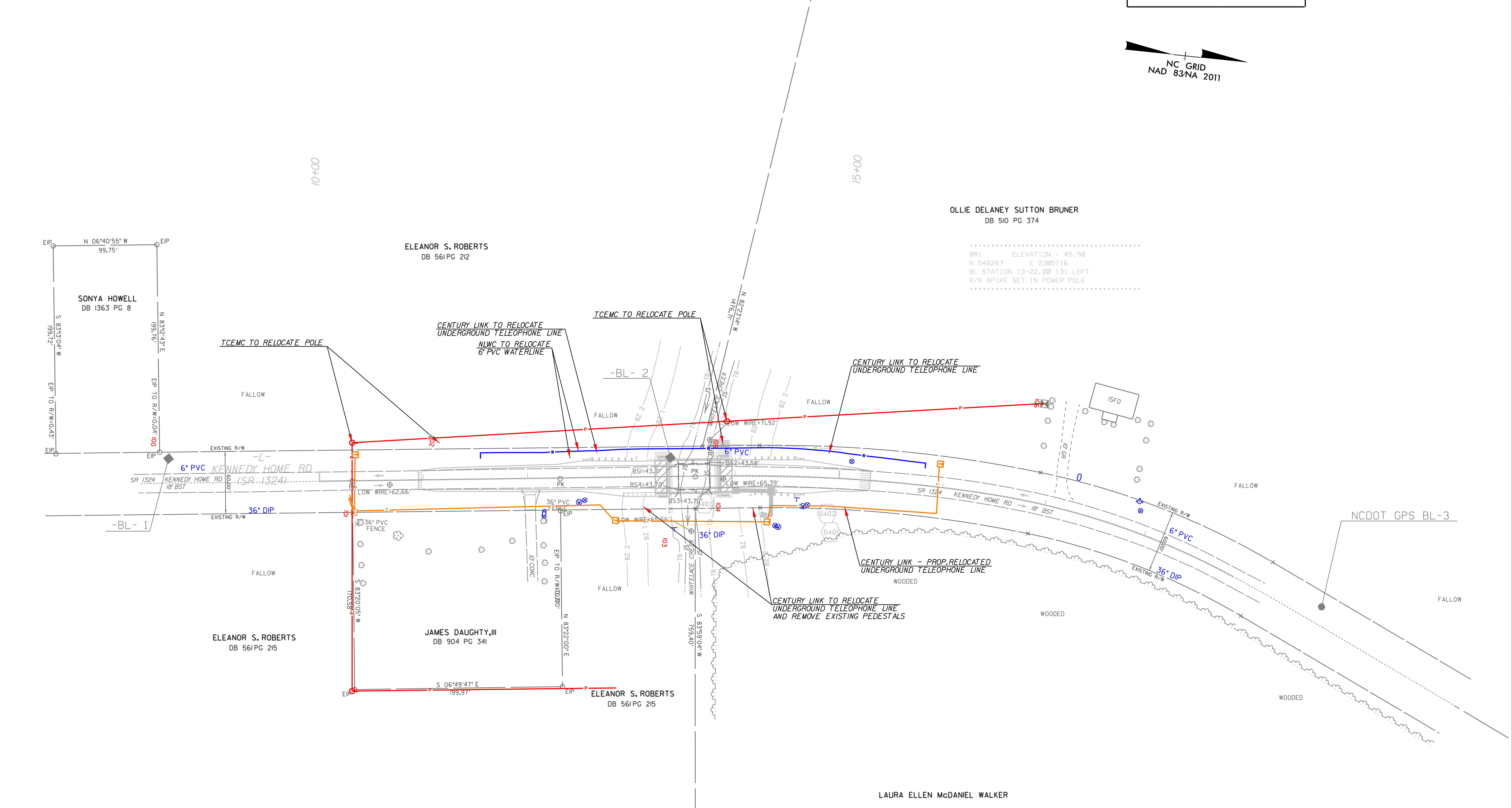
POWER: TRI– COUNTY EMC: TONY GRANTHAM 919–587–9600 TONY.GRANTHAM@TCEMC.COM
PHONE: CENTURY LINK: ALONZA MITCHELL 252–256–9633 ALONZA.MITCHELL@CENTURYLINK.COM
WATER/SEWER: NEUSE REGIONAL WATER & SEWER: HAROLD HERRING 252–522–2567 HAROLD.HERRING@NRWASA.ORG
WATER: NORTH LENOIR WATER CORPORATION: JEFF HARDISON 252–560–1492 JEFFNLWATER@EMBARQMAIL.COM

Kimley»Horn ©2018
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530055	U0-2
R/W SHEET NO.	

REVISIONS



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2/13/2018

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 546552.881(ft) EASTING: 2385882.440(ft)
ELEVATION: 45.36(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987606
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

- ACCESS AND/OR CONSTRUCTION EASEMENTS FOR TRI-COUNTY EMC FACILITIES HAVE BEEN OBTAINED BY TRI-COUNTY EMC

LEGEND

- EXISTING JOINT POWER AND TELEPHONE POLE
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED TELEPHONE PEDESTAL
- PROPOSED O/H POWER LINE
- RETAIN EXISTING U/G TELEPHONE LINE
- PROPOSED U/G TELEPHONE LINE
- RETAIN EXISTING U/G WATERLINE
- PROPOSED U/G WATERLINE

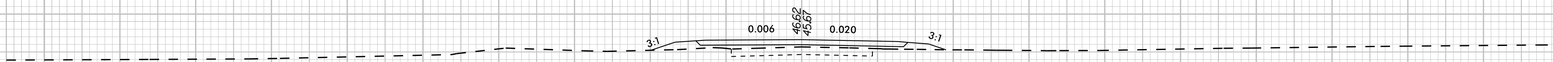
PROJ. REFERENCE NO.	SHEET NO.
SF-530055	X-1A

SF-530055 - BRIDGE 55 REPLACEMENT
CROSS SECTION INDEX

-L- SR 1324 (KENNEDY HOME RD) X-1 THRU X-4

2/13/2018 K:\RAL_Roadway\01I0036379 - Bridge55\Roadway\XSC\01I0036379_rdy_xpl_Index.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SF-530055	X-1



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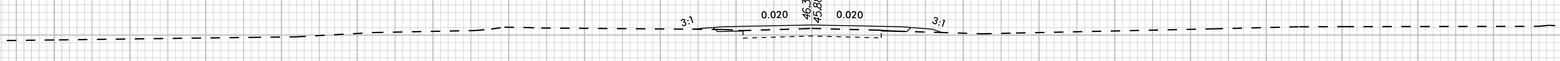

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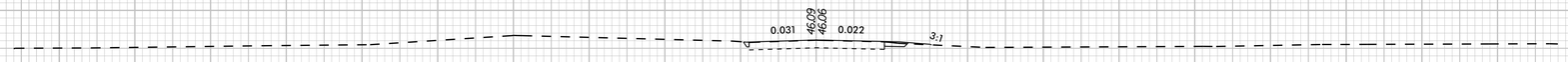

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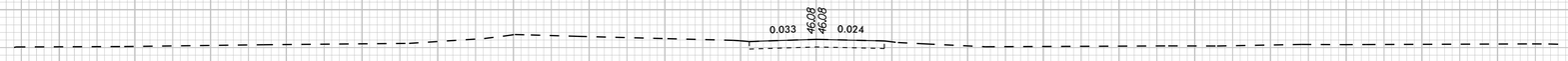

10+95.00

10+50.00

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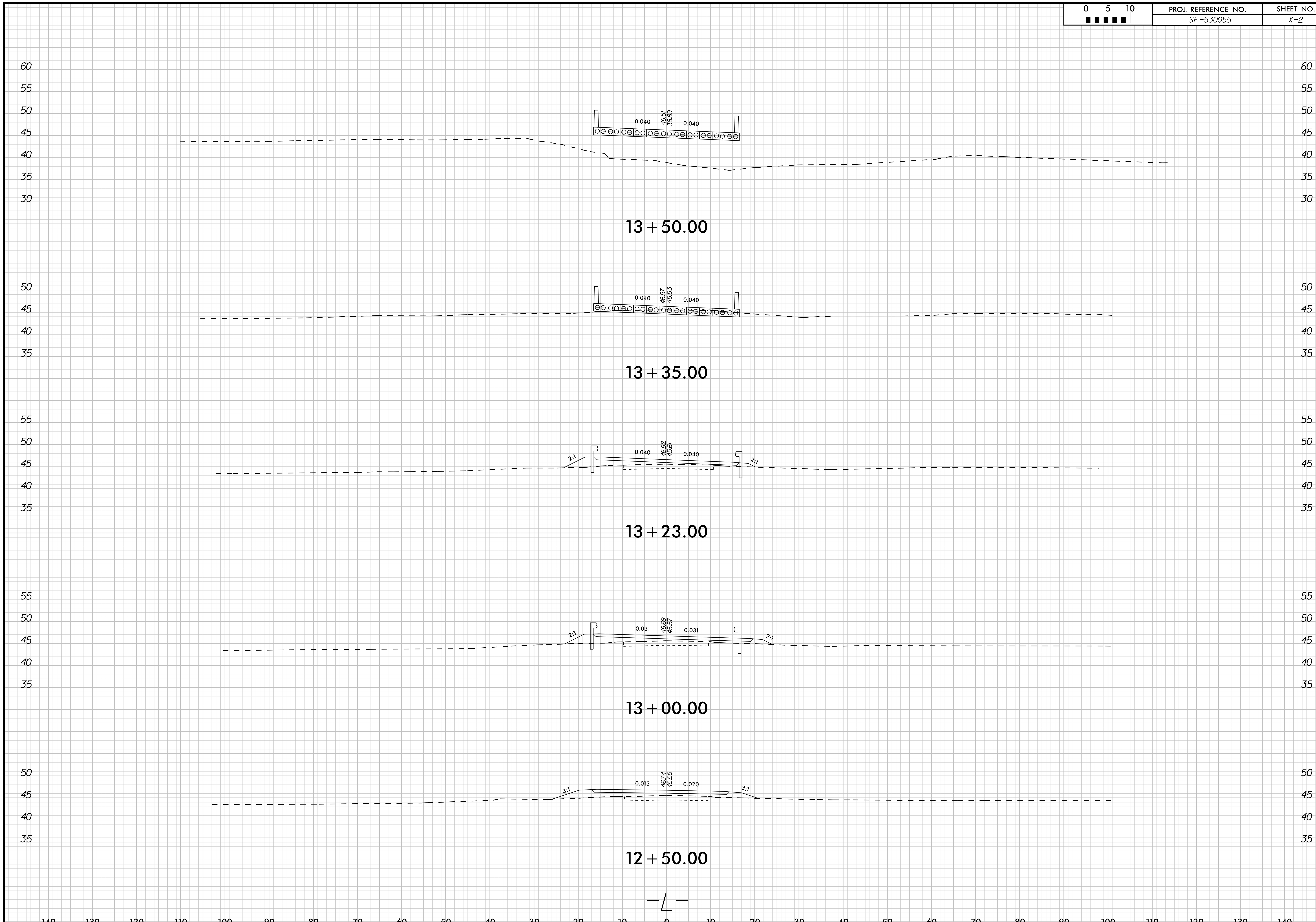
2/13/2018

PROJ. REFERENCE NO.	SHEET NO.
SF-530055	X-2



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2/13/2018

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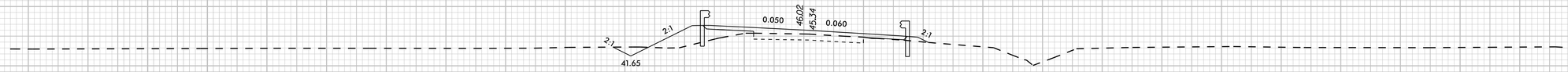

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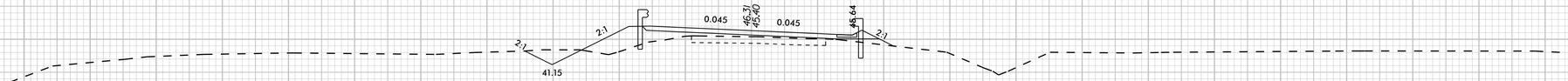

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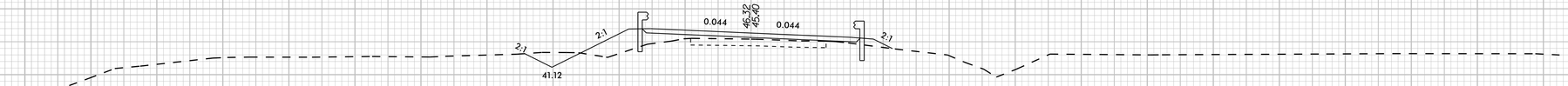

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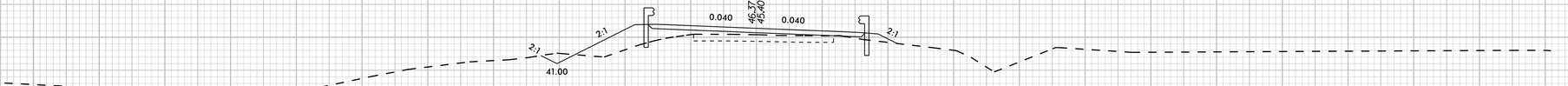

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2/13/2018

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SF-530055	X-4

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2/13/2018

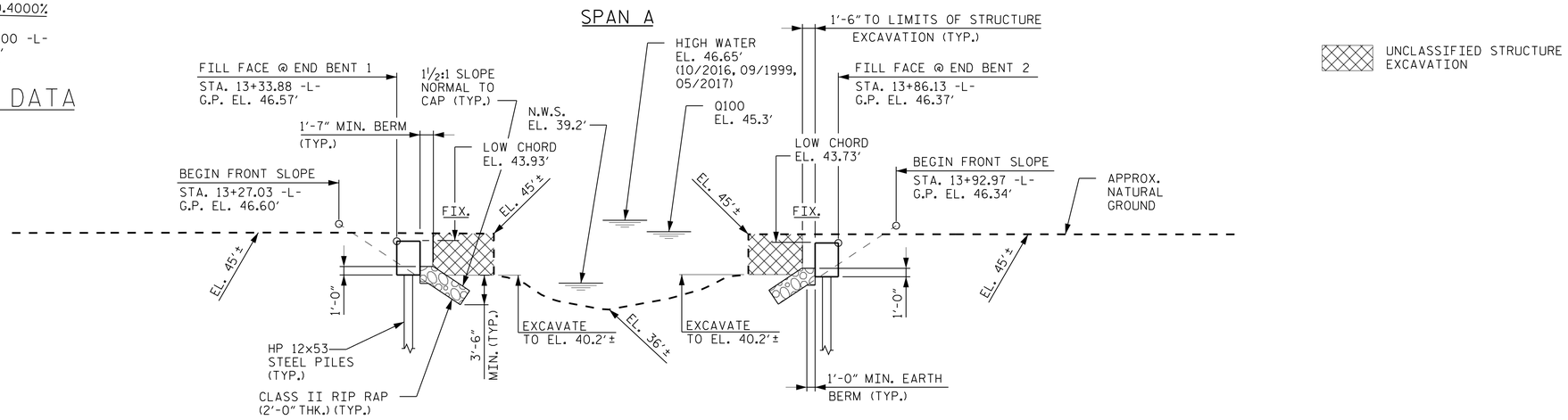
13+00 14+00

50 40 30

(+)0.7441% (-)0.4000%

P.I. STA. = 12+35.00 -L-
EL. = 46.97'
V.C. = 174'

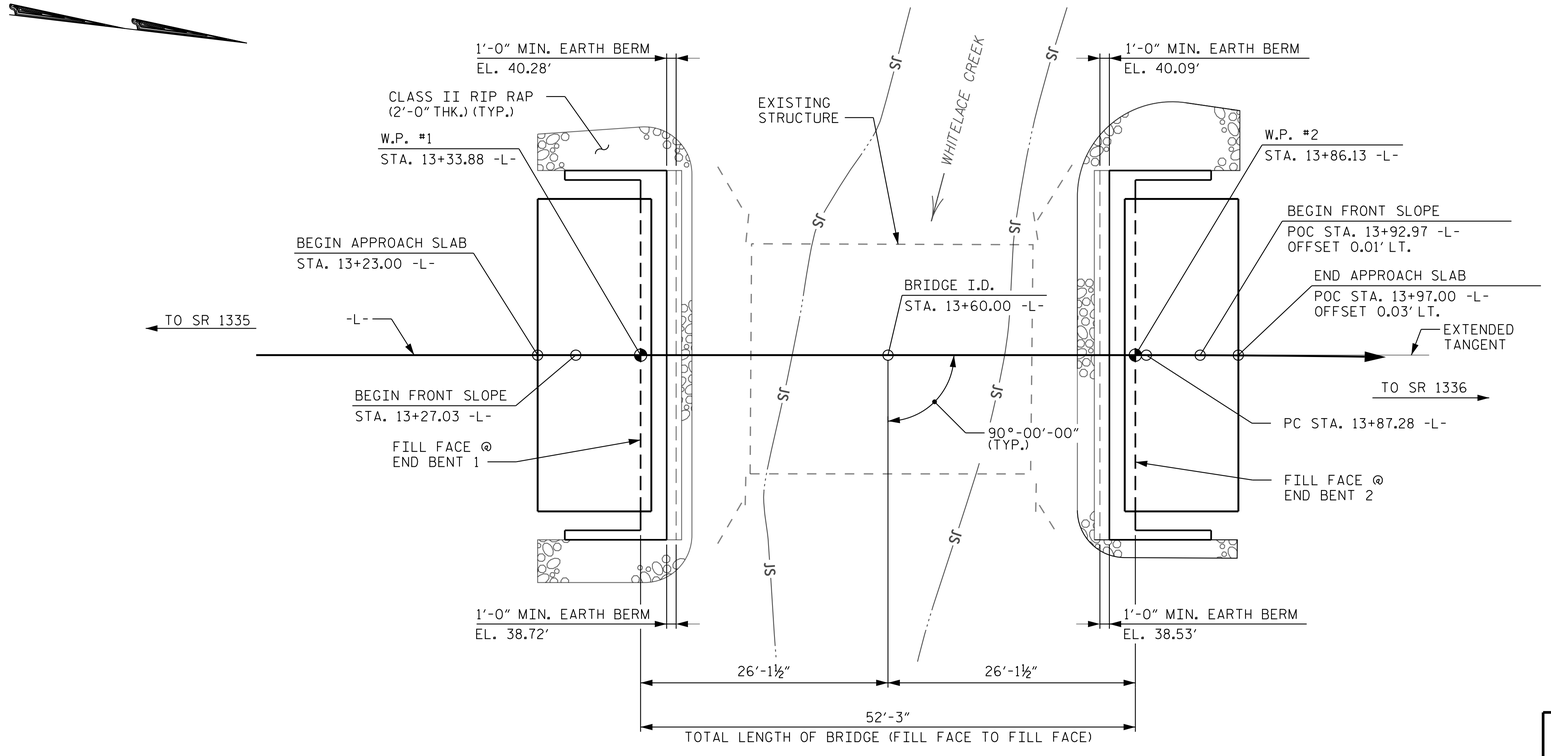
-L- GRADE DATA



END BENT 1 END BENT 2

SECTION ALONG -L-

SECTION AT END BENTS ARE AT RIGHT ANGLES



PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.

P.I. STA. 15+12.49 -L-
△ = 9°05'25.9" (RT)
D = 3°38'16.2"
L = 249.89'
T = 125.21'
R = 1,575.00'

HORIZONTAL CURVE DATA -L-

PROJECT NO. 17BP.2.R.78
LENOIR COUNTY
STATION: 13+60.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 55

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
WHITELACE CREEK
ON SR 1324 BETWEEN
SR 1336 AND SR 1335

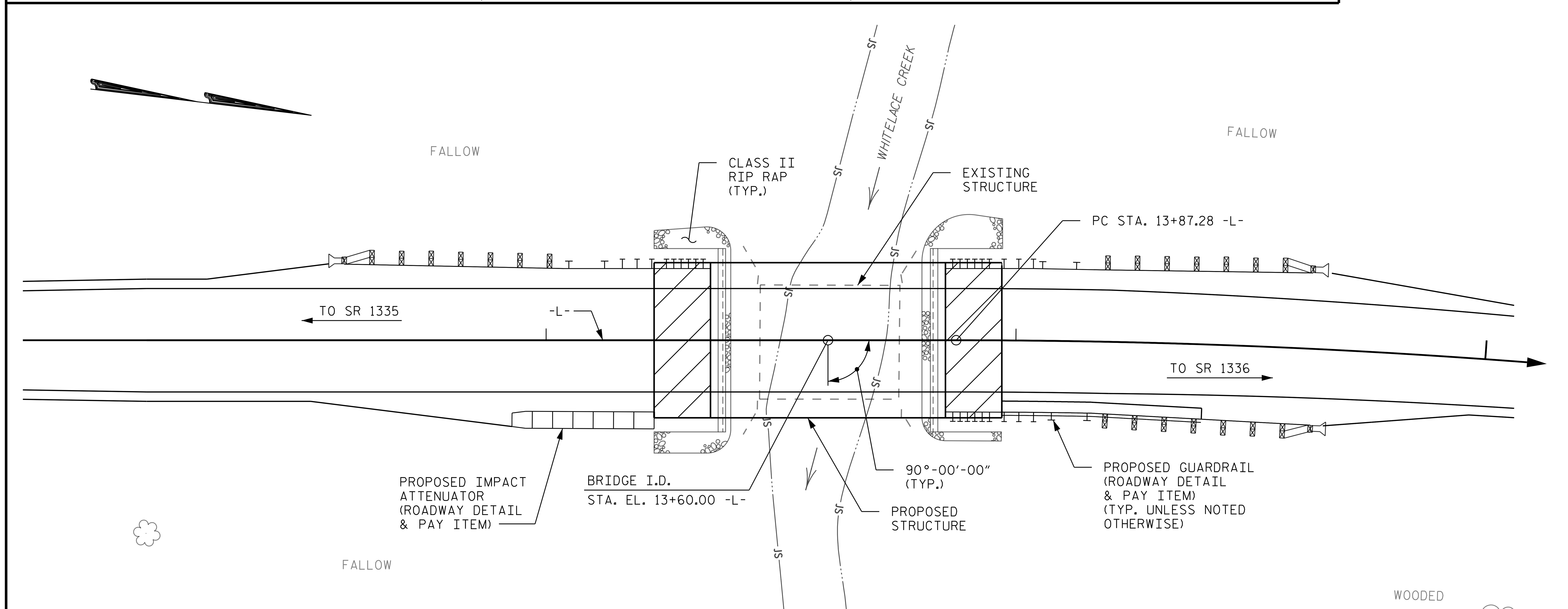
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			19

DRAWN BY: J.I. KIMBLE DATE: 12/17
CHECKED BY: S.A. DENNEY DATE: 12/17
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 12/17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

2/1/2018 K:\R01_Structures_Bridge\NC\01I036379 - Div 2 Bridge 55\Cad\Dgn\01-17BP.2.R.78_DIV02_GD01_530055.dgn

BM #1: R/R SPIKE SET IN POWER POLE, 131′ LT. OF STA. 13+22.00 -L-, EL. 45.90′



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 31′-0″ WITH A CLEAR ROADWAY OF APPROX. 24.5′ ON PRESTRESSED CONCRETE CHANNELS ON PRECAST PRESTRESSED CONCRETE CAPS ON TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS CURRENTLY NOT POSTED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF ℄ ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

ASPHALT WEARING COURSE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		PILE REDRIVES	TWO BAR METAL RAIL	1′-2″ X 2′-8¾″ CONCRETE PARAPET	RIP RAP CLASS II (2′-0″ THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EACH	NO.	LIN.FT.	EACH	LIN.FT.	LIN.FT.	TON	SQ.YD.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE						LUMP SUM						97.00	112.00			LUMP SUM	11	550
END BENT 1				LUMP SUM	21.6		2,638	7	7	350	4			52	58			
END BENT 2				LUMP SUM	21.6		2,638	7	7	350	4			64	71			
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	43.2	LUMP SUM	5,276	14	14	700	8	97.00	112.00	116	129	LUMP SUM	11	550

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 71 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 71 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	740	C.F.S.
FREQUENCY OF DESIGN FLOOD	25	YRS.
DESIGN HIGH WATER ELEVATION	44.5	FT.
DRAINAGE AREA	4.92	SQ. MI.
BASIC DISCHARGE (Q100)	1120	C.F.S.
BASIC HIGH WATER ELEVATION	45.3	FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	1300	C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	>100	YRS.
OVERTOPPING FLOOD ELEVATION	45.7	FT.

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew Phillips
2/13/2018

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 17BP.2.R.78
LENOIR COUNTY
STATION: 13+60.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER WHITELACE CREEK ON SR 1324 BETWEEN SR 1336 AND SR 1335

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-2
1			3					TOTAL SHEETS
2			4					19

DRAWN BY: J.I. KIMBLE DATE: 12/17
CHECKED BY: S.A. DENNEY DATE: 12/17
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 12/17

2/12/2018 K:\RDT_Structures_Bridge\NC\011036379 - Div 2 Bridge 55\Cad\Dgn\02-17BP.2.R.78_01V02_LS01_530055.dgn

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50′	EL	24.5	0.531	**1.39**	50′	EL	**2.45**	0.80	0.276	1.44	50′	EL	24.5	
		HL-93(Opr)	N/A	--	1.807	--	1.35	0.276	2.03	50′	EL	24.5	0.531	1.81	50′	EL	2.45	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50′	EL	24.5	0.531	**1.67**	50′	EL	**2.45**	0.80	0.276	1.79	50′	EL	24.5	
		HS-20(Opr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50′	EL	24.5	0.531	2.16	50′	EL	2.45	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50′	EL	24.5	0.531	4.7	50′	EL	2.45	0.80	0.276	3.64	50′	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.42	1.4	0.276	3.91	50′	EL	24.5	0.531	3.42	50′	EL	2.45	0.80	0.276	2.87	50′	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50′	EL	19.6	0.531	3.21	50′	EL	2.45	0.80	0.276	2.78	50′	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50′	EL	24.5	0.531	2.36	50′	EL	2.45	0.80	0.276	1.81	50′	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50′	EL	24.5	0.531	2.01	50′	EL	2.45	0.80	0.276	1.58	50′	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50′	EL	24.5	0.531	2.07	50′	EL	2.45	0.80	0.276	1.54	50′	EL	24.5	
		SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50′	EL	24.5	0.531	1.91	50′	EL	2.45	0.80	0.276	1.44	50′	EL	24.5	
		SNS7B	42.000	--	1.370	57.54	1.4	0.276	1.87	50′	EL	24.5	0.531	1.91	50′	EL	2.45	0.80	0.276	1.37	50′	EL	24.5	
	TTST	TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.4	50′	EL	24.5	0.531	2.25	50′	EL	2.45	0.80	0.276	1.76	50′	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50′	EL	24.5	0.531	2.17	50′	EL	2.45	0.80	0.276	1.78	50′	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50′	EL	24.5	0.531	2.08	50′	EL	2.45	0.80	0.276	1.48	50′	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50′	EL	24.5	0.531	1.94	50′	EL	2.45	0.80	0.276	1.50	50′	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50′	EL	24.5	0.531	1.84	50′	EL	2.45	0.80	0.276	1.57	50′	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50′	EL	24.5	0.531	1.77	50′	EL	2.45	0.80	0.276	1.49	50′	EL	24.5	
		TNAGT5A	45.000	--	1.388	62.47	1.4	0.276	1.89	50′	EL	24.5	0.531	1.8	50′	EL	2.45	0.80	0.276	1.39	50′	EL	24.5	
		TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50′	EL	24.5	0.531	1.68	50′	EL	2.45	0.80	0.276	**1.36**	50′	EL	**24.5**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

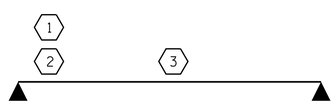
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

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Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 50′ CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			19

ASSEMBLED BY : JJ. KIMBLE	DATE : 12/17	
CHECKED BY : A.L. PHILLIPS	DATE : 12/17	
DRAWN BY : CVC 6/10		
CHECKED BY : DNS 6/10		

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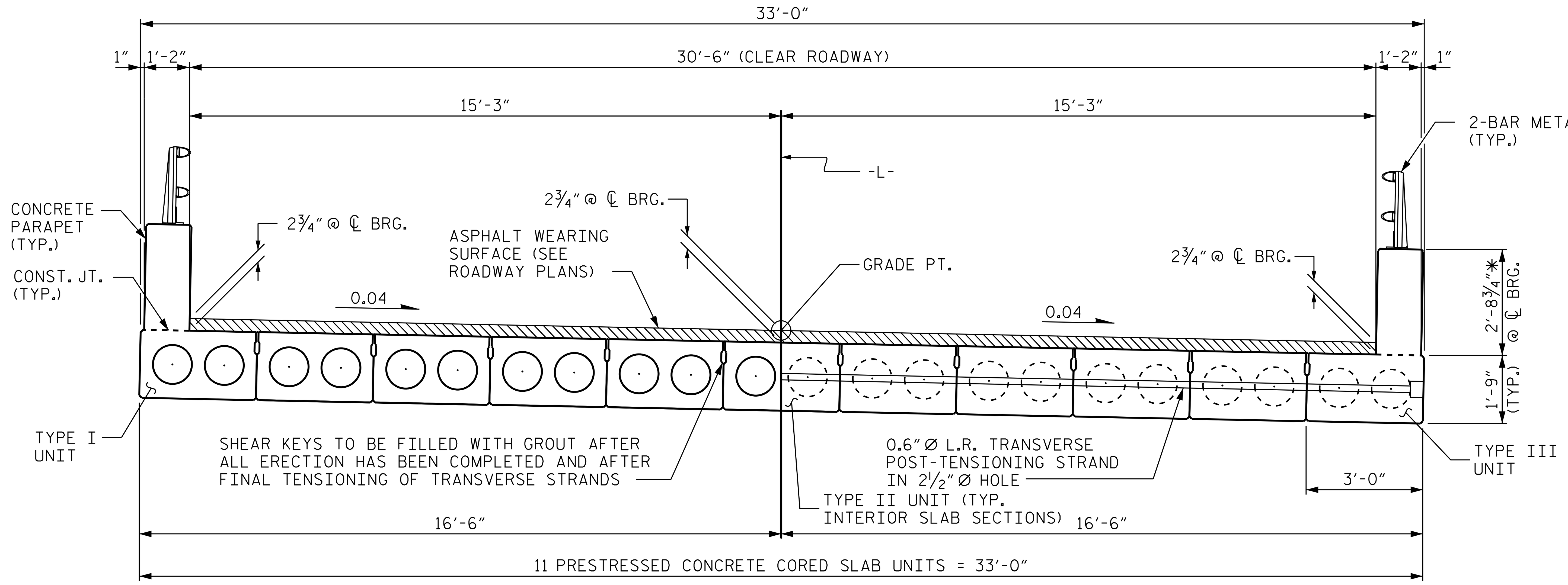
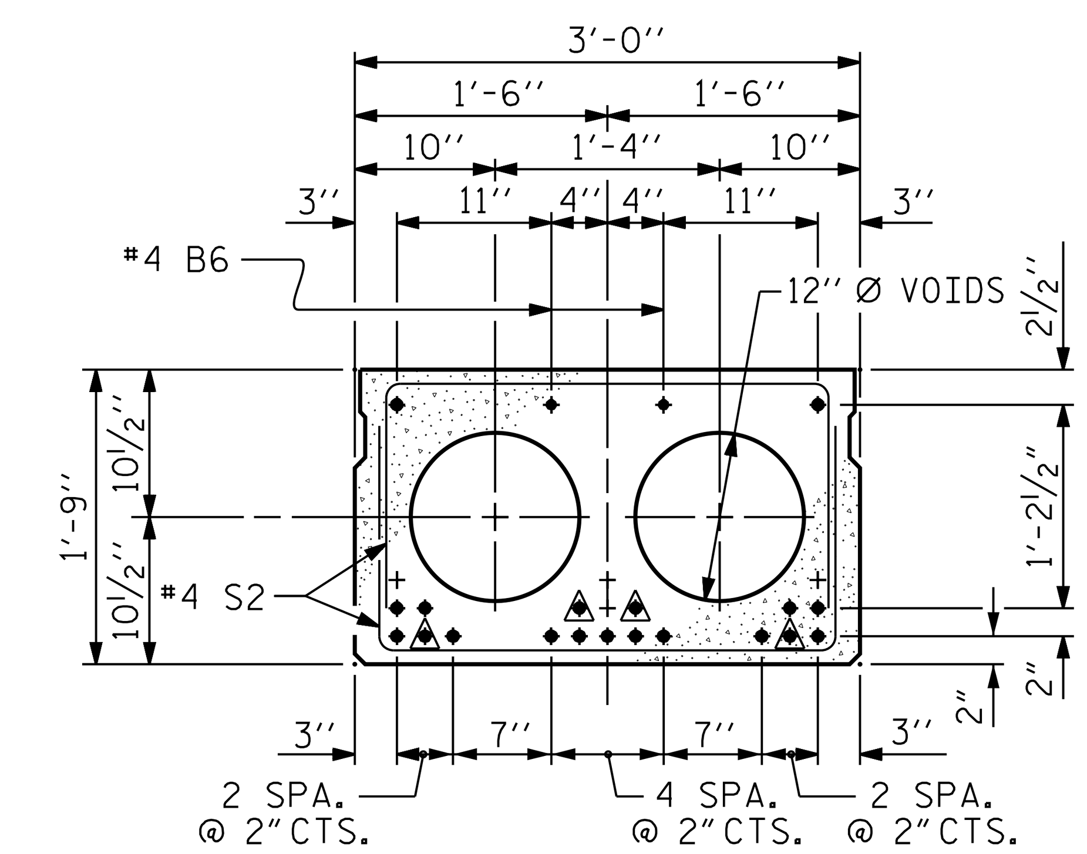
STD. NO. 21LRFR1_90S_50L

2/1/2018 K:\RDT_Structures_Bridge\NC\01103679 - Div 2 Bridge 55\Cad\Dgn\03-17BP.2.R.78_DIV02_LRFR01_530055.dgn



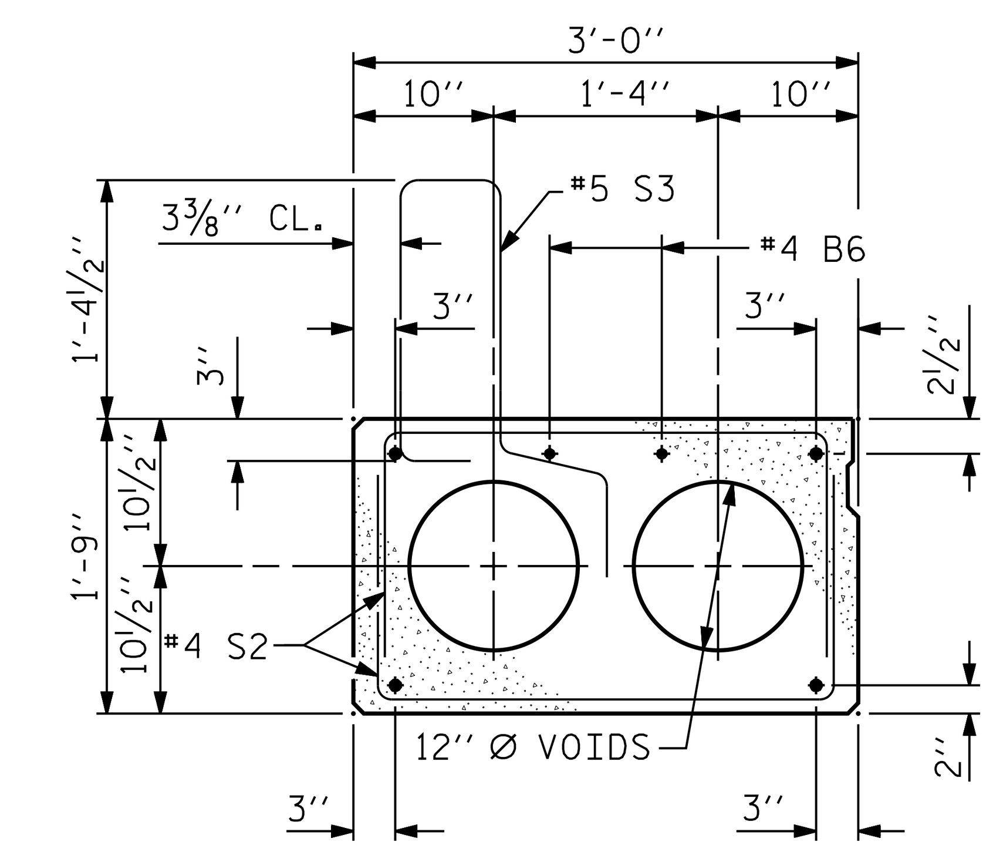
TYPICAL SECTION

✱ - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR CONCRETE PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS SEE SHEET 3 OF 3.



INTERIOR SLAB SECTION (50' UNIT)

TYPE II UNIT (19 STRANDS REQUIRED)



EXT. SLAB SECTION

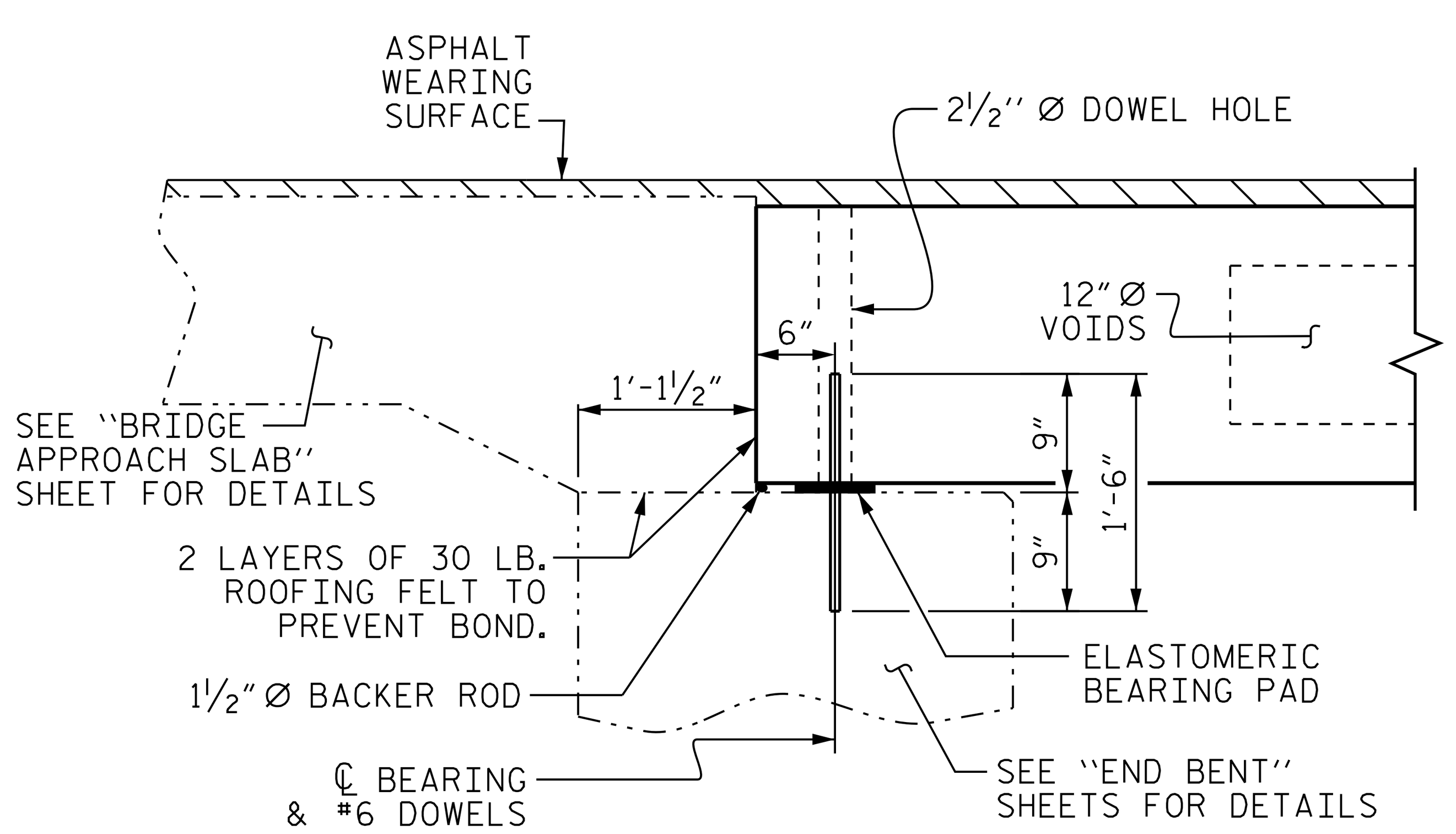
TYPE I & III UNITS (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

0.6" Ø LOW RELAXATION STRAND LAYOUT

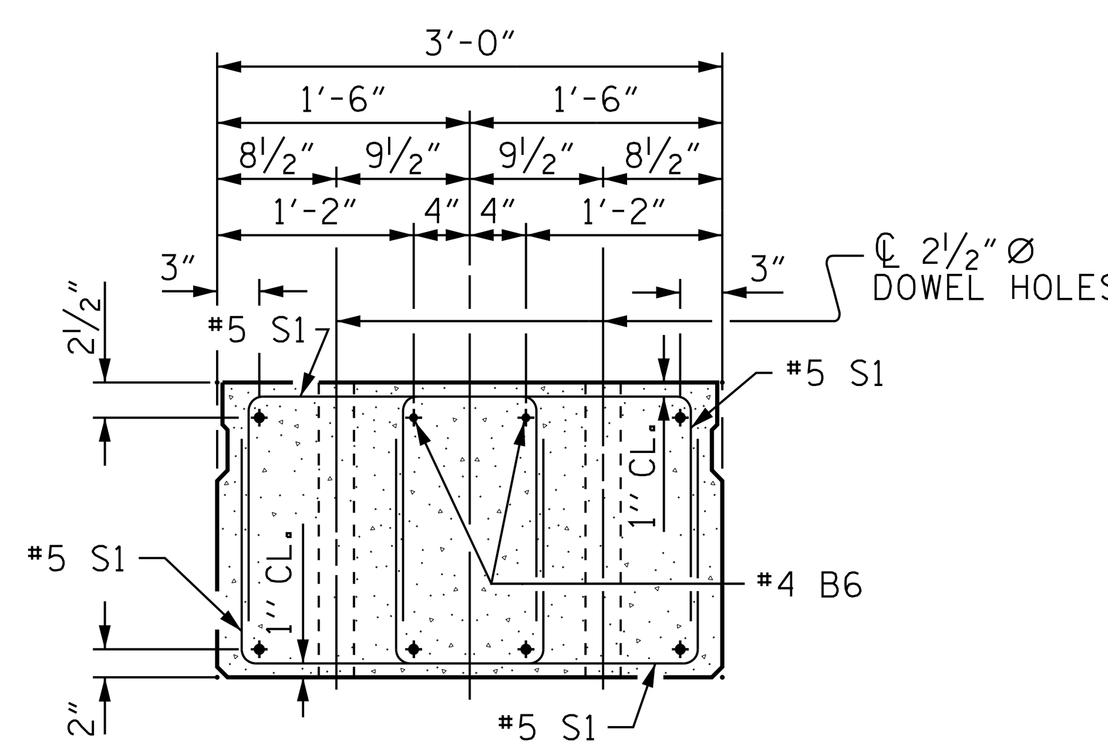
(▲) BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

FIXED END

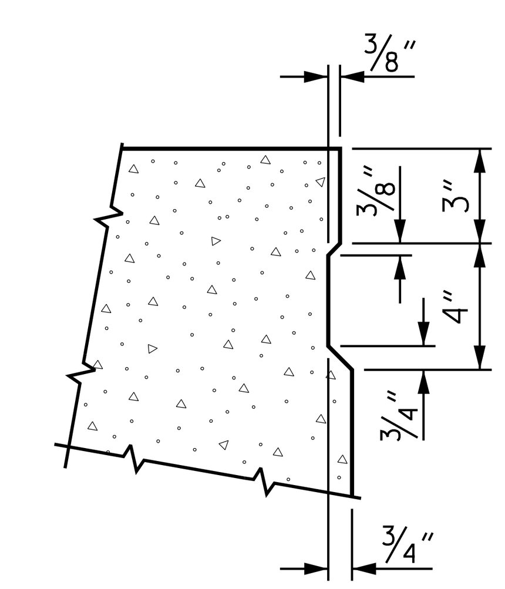


SECTION AT END BENT



END ELEVATION

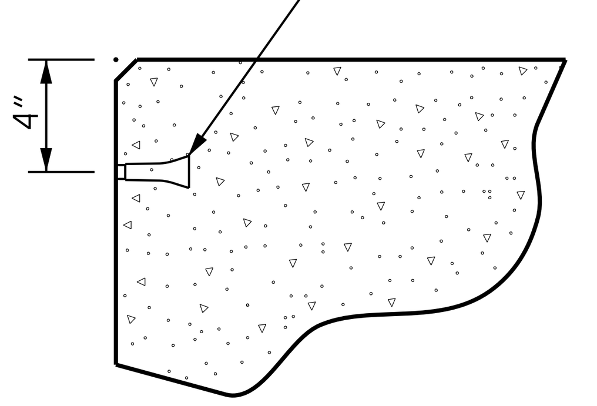
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



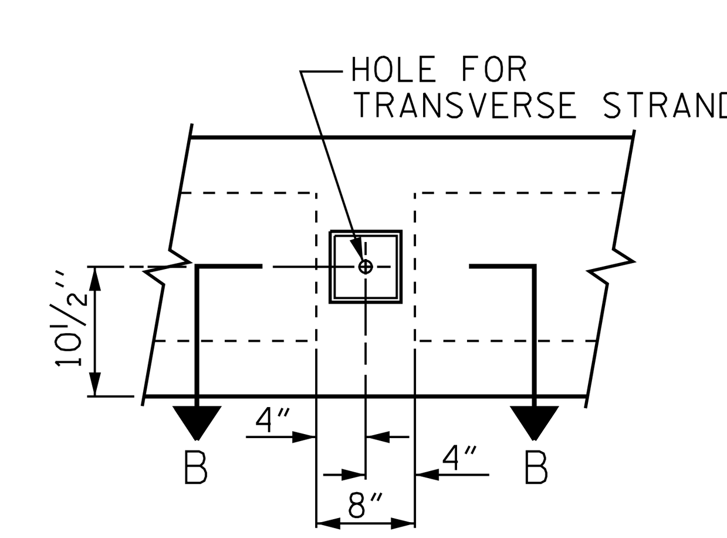
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

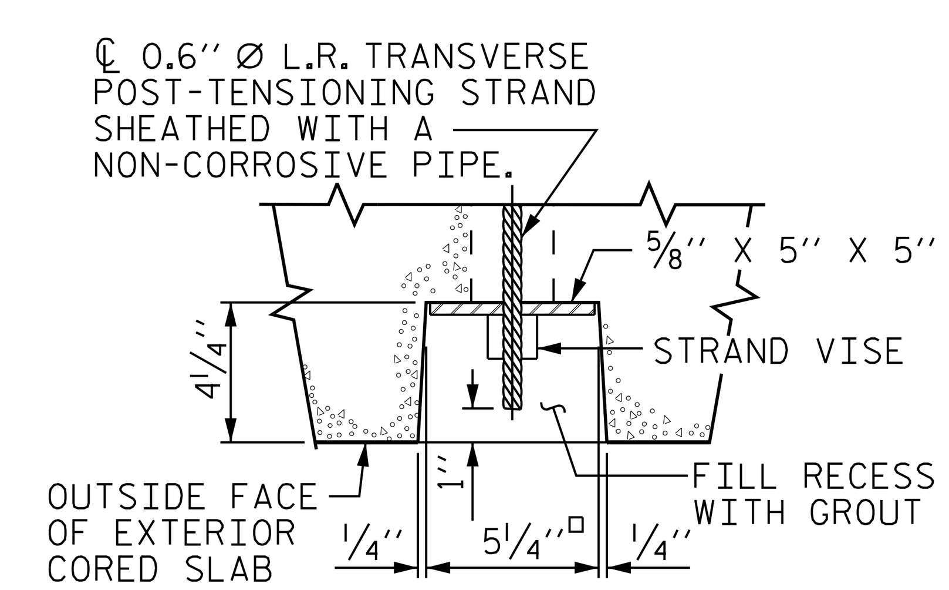
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED ⅜". SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL



ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

2/13/2018

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

Kimley»Horn

421 Fayetteville Street, Suite 600
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Phone (919) 677-2000
NC LICENSE # F-0102

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ASSEMBLED BY : J.J. KIMBLE	DATE : 12/17		
CHECKED BY : A.L. PHILLIPS	DATE : 12/17		
DRAWN BY : DGE 5/09			
CHECKED BY : BCH 6/09			

REVISIONS								SHEET NO.
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1				3				TOTAL SHEETS
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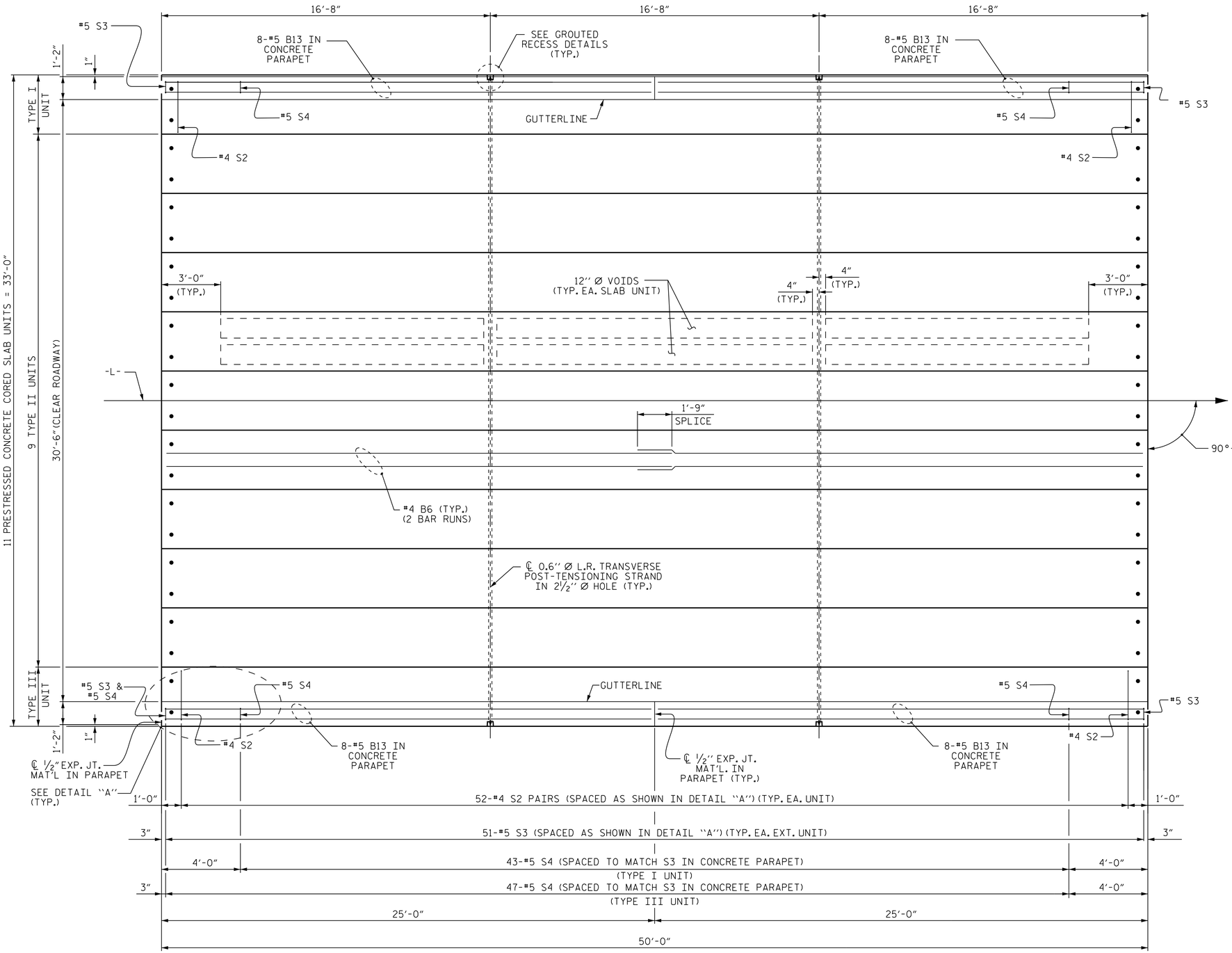
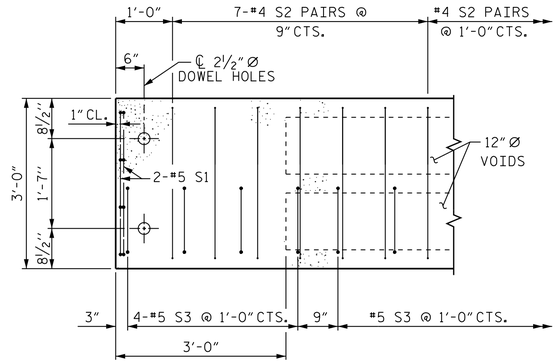
STD. NO. 21" PCS2_33_90S



PLAN OF UNIT



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

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2/1/2018

ASSEMBLED BY : JJ. KIMBLE	DATE : 12/17		
CHECKED BY : A.L. PHILLIPS	DATE : 12/17		
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC		
CHECKED BY : BCH 3/09	REV. 8/14 MAA/TMG		

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LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT
30'-6" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
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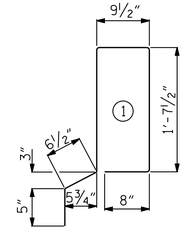
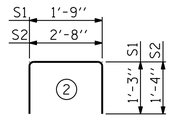
STD. NO. 21"PCS_33_90S_50L

BILL OF MATERIAL FOR ONE 50′ CORED SLAB UNIT

				TYPE I OR III		TYPE II	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25′-9″	69	25′-9″	69
S1	8	#5	2	4′-3″	35	4′-3″	35
S2	104	#4	2	5′-4″	371	5′-4″	371
✳ S3	51	#5	1	5′-8″	301		
REINFORCING STEEL LBS.					475		475
✳ EPOXY COATED REINFORCING STEEL LBS.					301		
6500 P.S.I. CONCRETE CU. YDS.					7.1		7.1
0.6″Ø L.R. STRANDS No.					19		19

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½″Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE ''CONCRETE RELEASE STRENGTH'' TABLE.

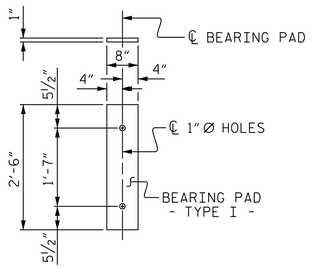
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4′-0″ CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



FIXED END
(TYPE I - 22 REQ′D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS	PARAPET HEIGHT
	@ MID-SPAN	@ MID-SPAN
50′ UNITS	1⅝″	2′-7⅝″

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
50′ UNIT			
TYPE I UNIT	1	50′-0″	50′-0″
TYPE III UNIT	1	50′-0″	50′-0″
TYPE II UNIT	9	50′-0″	450′-0″
TOTAL	11		550′-0″

CONCRETE RELEASE STRENGTH

50′ UNITS	4900 PSI

GRADE 270 STRANDS

	0.6″Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 1′-9″
50′ CORED SLAB UNIT	0.6″Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	⅜″ ↓
FINAL CAMBER	1⅛″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
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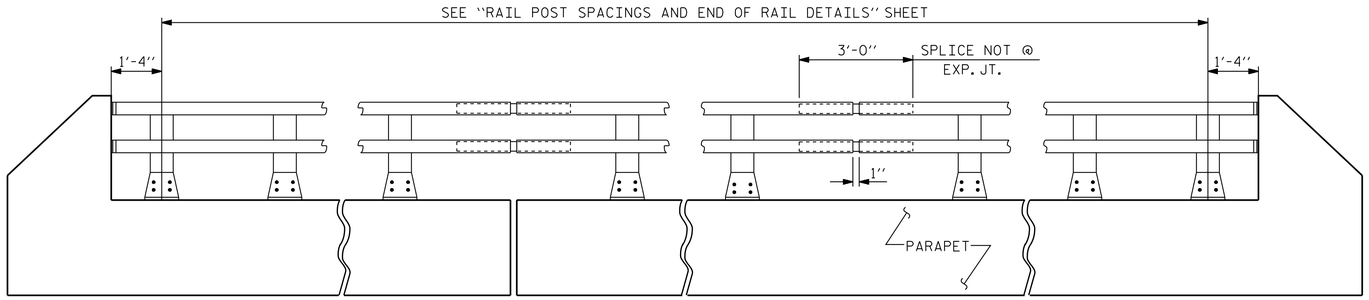
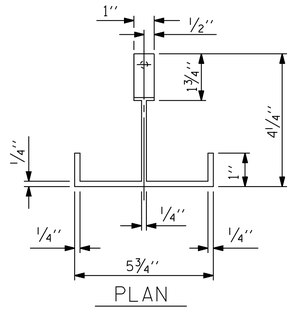
STD. NO. 21″PCS3_33_90S

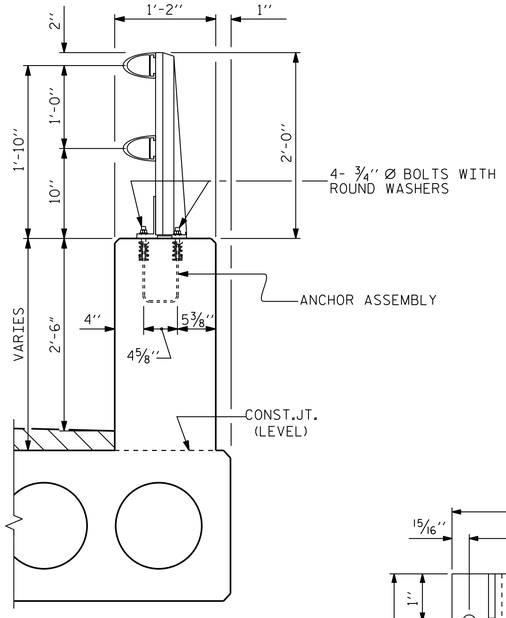


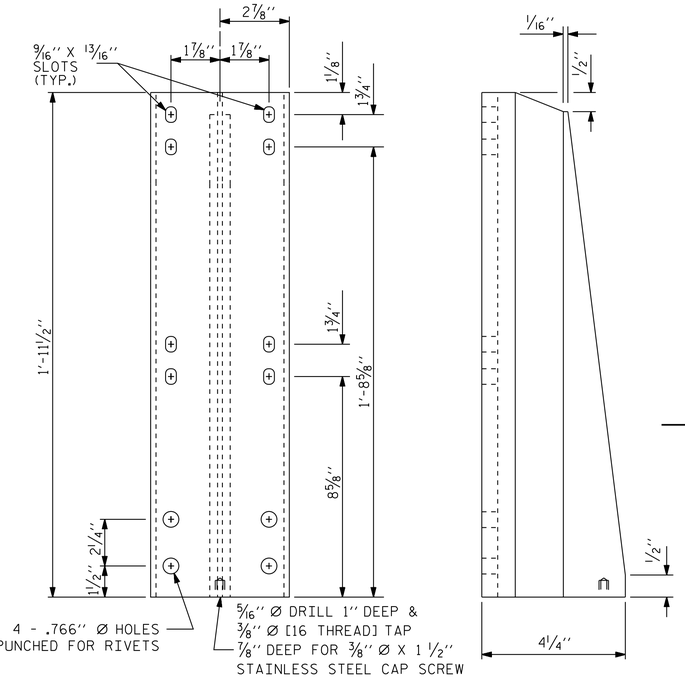
ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-9.



PLAN



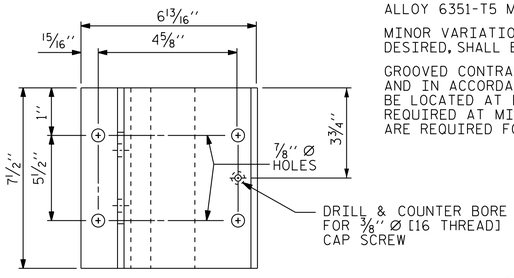


FRONT ELEVATION

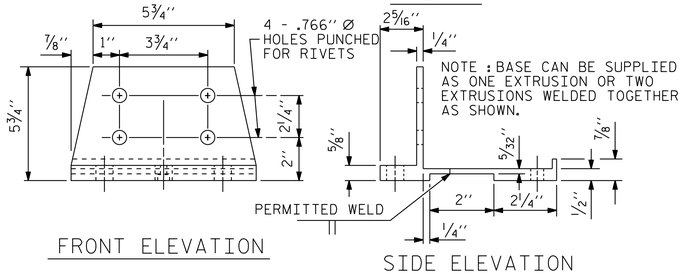
SIDE ELEVATION

DETAILS OF POST

SECTION THRU PARAPET AND RAIL

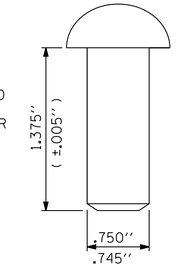


PLAN



FRONT ELEVATION

SIDE ELEVATION



RIVET DETAIL

POST BASE DETAILS

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFDBRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 97.0 LIN. FT.

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 2/13/2018

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DRAWN BY : EEM	6/94	REV. 10/1/11	MAA/GM
CHECKED BY : RGW	6/94	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

2/1/2018

K:\RDI_Structures_Bridge\NCDOT1036379 - Div 2 Bridge 55\Cad\Dgn\07-17BP.2.R.78_DIV02_2MR01_530055.dgn

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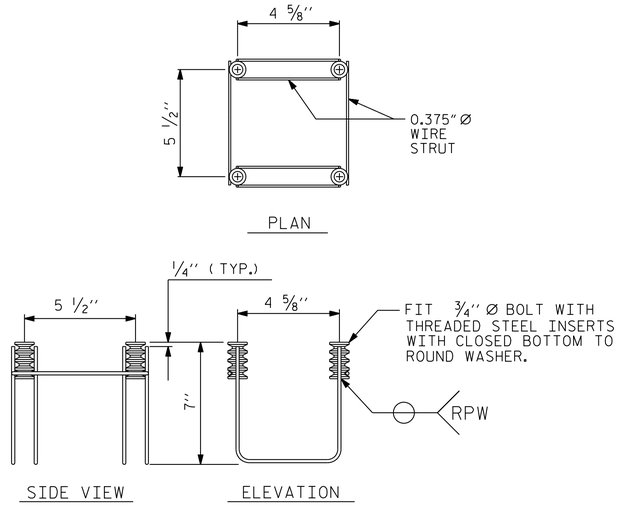
STD. NO. BMR3



4-BOLT METAL RAIL ANCHOR ASSEMBLY

(22 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2'' FOR 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4'' Ø X 2 1/2'' GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

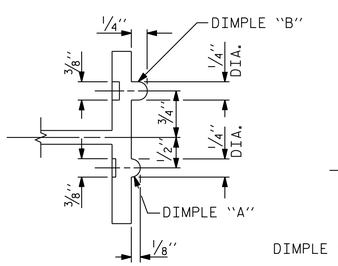
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

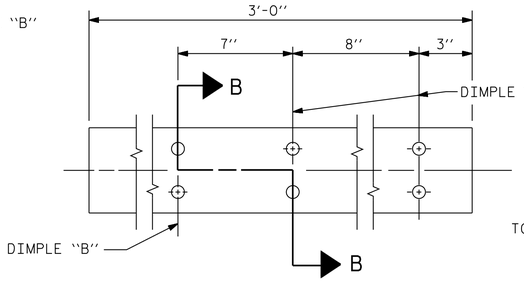
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

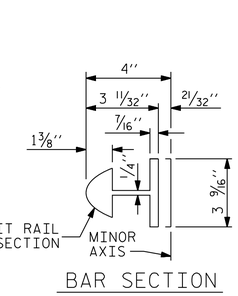
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



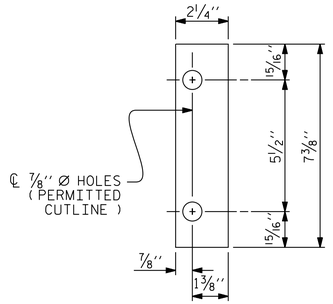
SECTION B - B



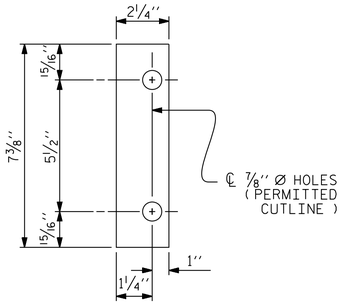
EXPANSION BAR DETAILS



BAR SECTION



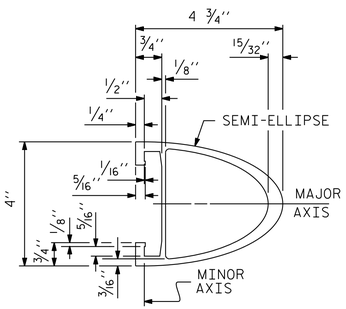
FRONT PLATE



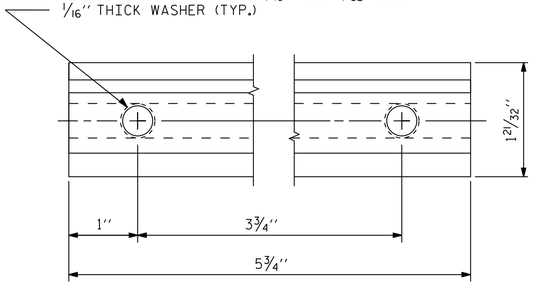
REAR PLATE

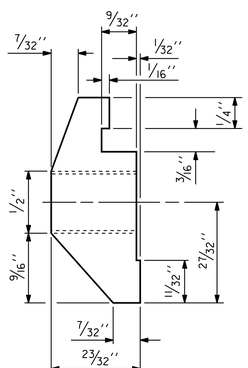
SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



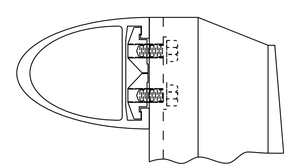
RAIL SECTION



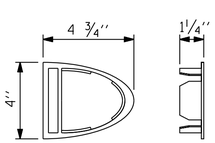


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY : JJ. KIMBLE	DATE : 12/17
CHECKED BY : A.L. PHILLIPS	DATE : 12/17

DRAWN BY : EEM 6/94	REV. 5/1/06R	KMM/GM
CHECKED BY : RGW 6/94	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			19

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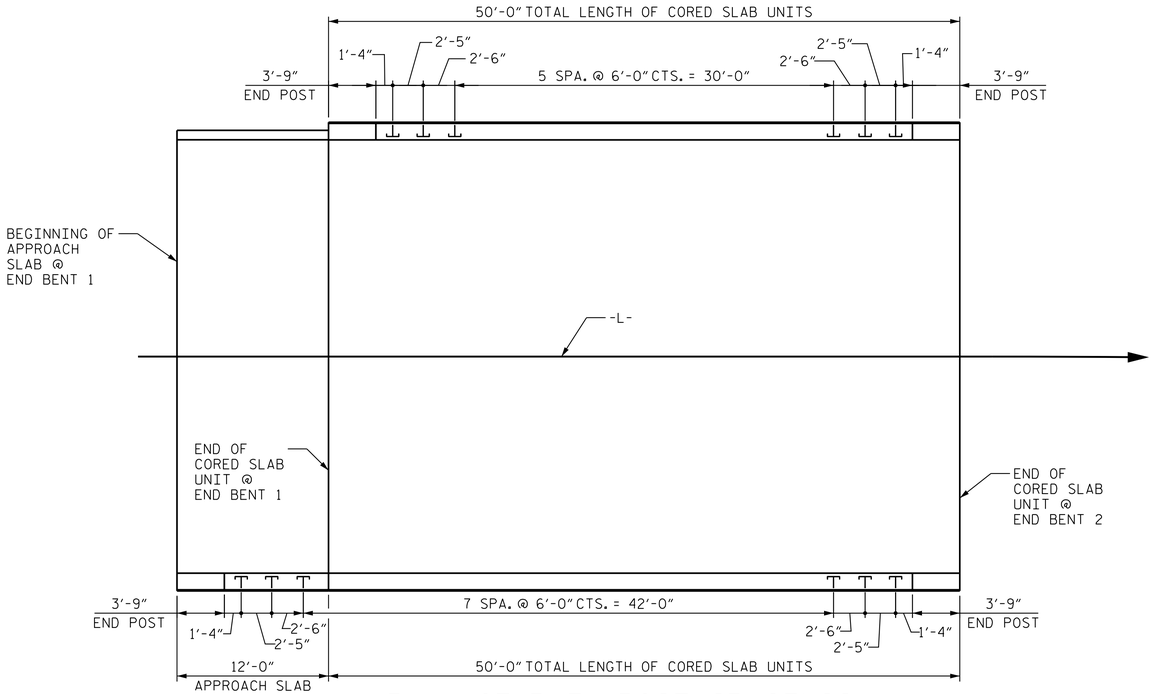
Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STD. NO. BMR4



PLAN OF RAIL POST SPACINGS

TOTAL NUMBER OF RAIL POSTS = 22

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½''.

B. 1 - ¾'' Ø X 1⅝'' BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾'' Ø X 1⅝'' GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½'' PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾'' STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾''Ø X 1⅝'' BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾''Ø X 1⅝'' BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

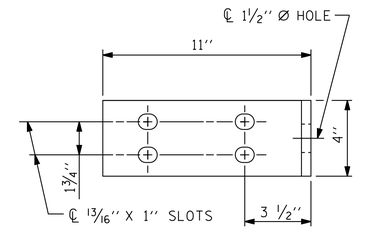
E. ½'' Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

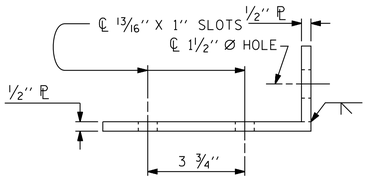
THE ¾'' STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾'' STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½'' PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

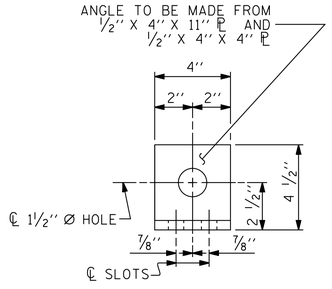
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾'' Ø X 1⅝'' BOLT WITH WASHER SHALL BE REPLACED WITH A ¾''Ø X 6½'' BOLT AND 2'' O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾'' Ø X 1⅝'' BOLT SHALL APPLY TO THE ¾''Ø X 6 ½'' BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



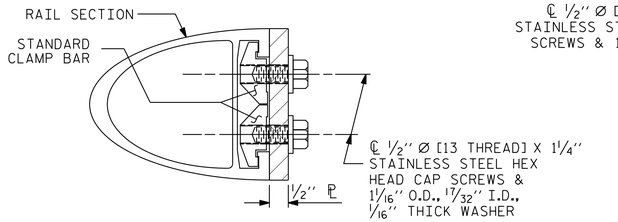
ELEVATION



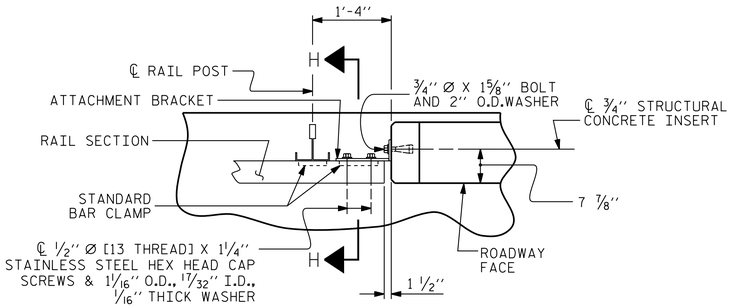
TOP VIEW



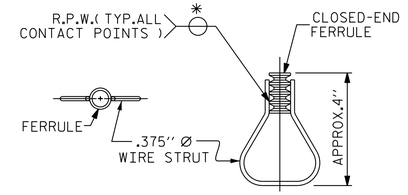
END VIEW



SECTION H-H



PLAN - RAIL AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 3 OF 3

DETAILS FOR ATTACHING METAL RAIL TO END POST

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 2/13/2018

Kimley»Horn
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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			19

ASSEMBLED BY :	JJ. KIMBLE	DATE :	12/17
CHECKED BY :	A.L. PHILLIPS	DATE :	12/17
DRAWN BY :	FCJ 1/88	REV. 5/1/06	TLA/GM
CHECKED BY :	CRK 3/89	REV. 10/1/11	MAA/GM
		REV. 12/17	MAA/THC

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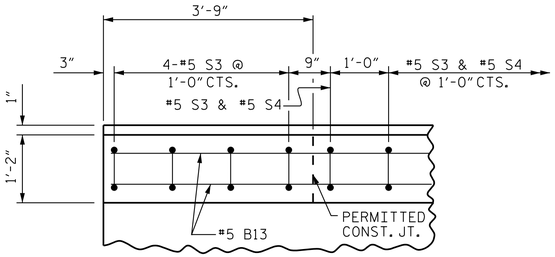
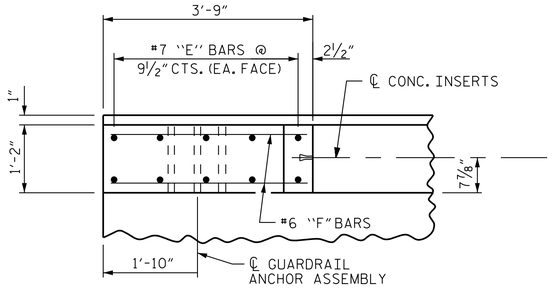
STD. NO. BMR2

2/1/2018 K:\RDT.Structures_Bridge\NC\01036379 - Div 2 Bridge 55\Cad\Dgn\09-17BP.2.R.78.D1V02.2MR03.530055.dgn



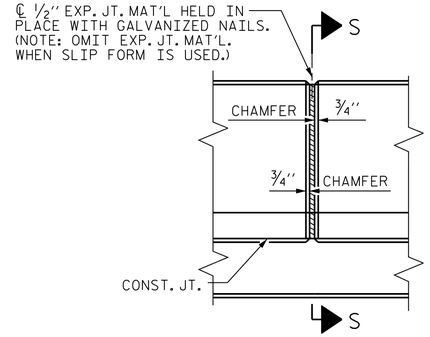
PLAN OF PARAPET



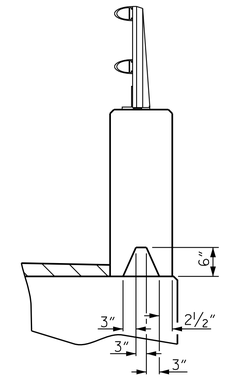
PLAN OF END POST

PLAN OF PARAPET AND END POST FOR TWO BAR RAIL

FOR DETAILS ON #5 S3 BARS, SEE SHEETS S-4 THRU S-6.



ELEVATION AT EXPANSION JOINTS



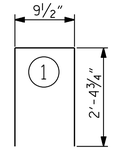
SECTION S-S

AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

BILL OF MATERIAL
2 PARAPETS & 3 END POSTS✳

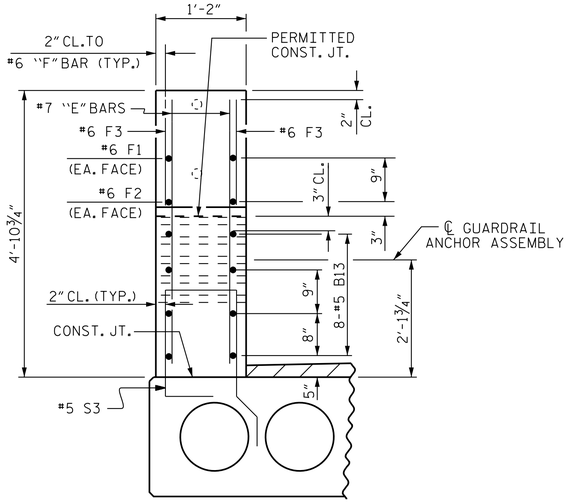
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B13	32	5	STR	24'-7"	820
✳E1	6	7	STR	2'-8"	33
✳E2	6	7	STR	3'-2"	39
✳E3	6	7	STR	3'-8"	45
✳E4	6	7	STR	4'-2"	51
✳E5	6	7	STR	4'-6"	55
✳F1	6	6	STR	1'-9"	16
✳F2	6	6	STR	2'-11"	26
✳F3	6	6	STR	3'-3"	29
✳S4	90	5	1	5'-7"	524
✳EPOXY COATED REINFORCING STEEL				LBS.	1,638
CLASS AA CONCRETE				CU. YDS.	12.2
CONCRETE PARAPET				LIN. FT.	100.00

BAR TYPE

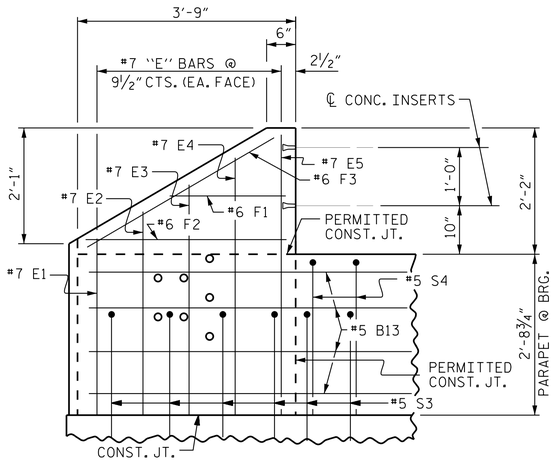


ALL BAR DIMENSIONS ARE OUT-TO-OUT

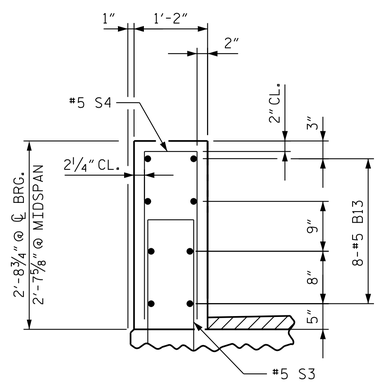
✳FOR DETAILS ON END POST IN SOUTHEAST QUADRANT, SEE SHEETS S-17 THRU S-19.



END VIEW



ELEVATION



CONCRETE PARAPET SECTION

PARAPET AND END POST FOR TWO BAR RAIL

FOR DETAILS ON #5 S3 BARS, SEE SHEETS S-4 THRU S-6.

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 2/13/2018

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

1'-2" X 2'-8¾"
CONCRETE PARAPET
AND END POSTS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			19

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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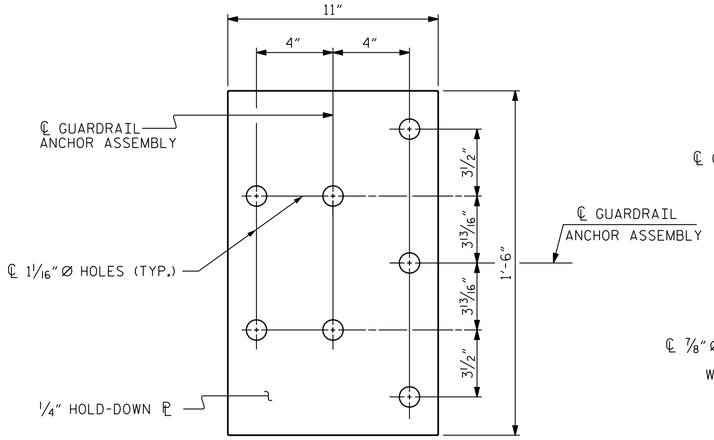
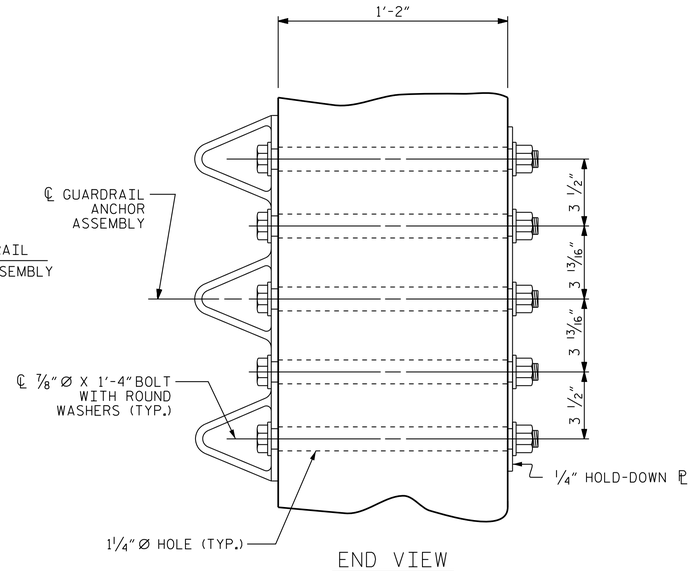
DRAWN BY: J.I. KIMBLE DATE: 12/17
CHECKED BY: S.A. DENNEY DATE: 12/17
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 12/17

2/1/2018 K:\RDT_Structures_Bridge\NC\01I036379 - Div 2 Bridge 55\Cad\Dgn\10-17BP.2.R.78_DIV02_CPEP01_530055.dgn



PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4'' HOLD DOWN PLATE AND 7 - 7/8'' Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8'' Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

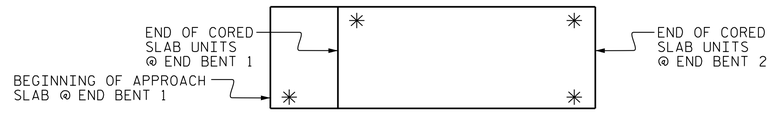
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

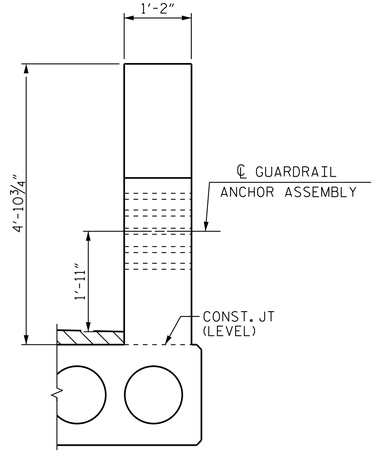
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

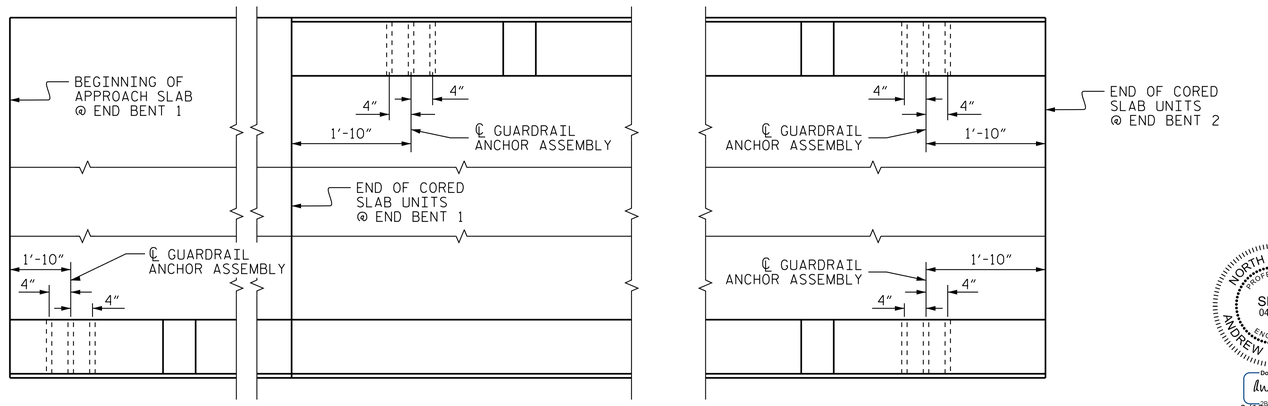


SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. 17BP.2.R.78
LENOIR COUNTY
STATION: 13+60.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

ASSEMBLED BY : JJ. KIMBLE	DATE : 12/17
CHECKED BY : A.L. PHILLIPS	DATE : 12/17

DRAWN BY : MAA 5/10	REV. 12/5/11	MAA/GM
CHECKED BY : GM 5/10	REV. 6/13	MAA/GM
	REV. 1/15	MAA/TMG

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2			4			19

STD. NO. GRA3

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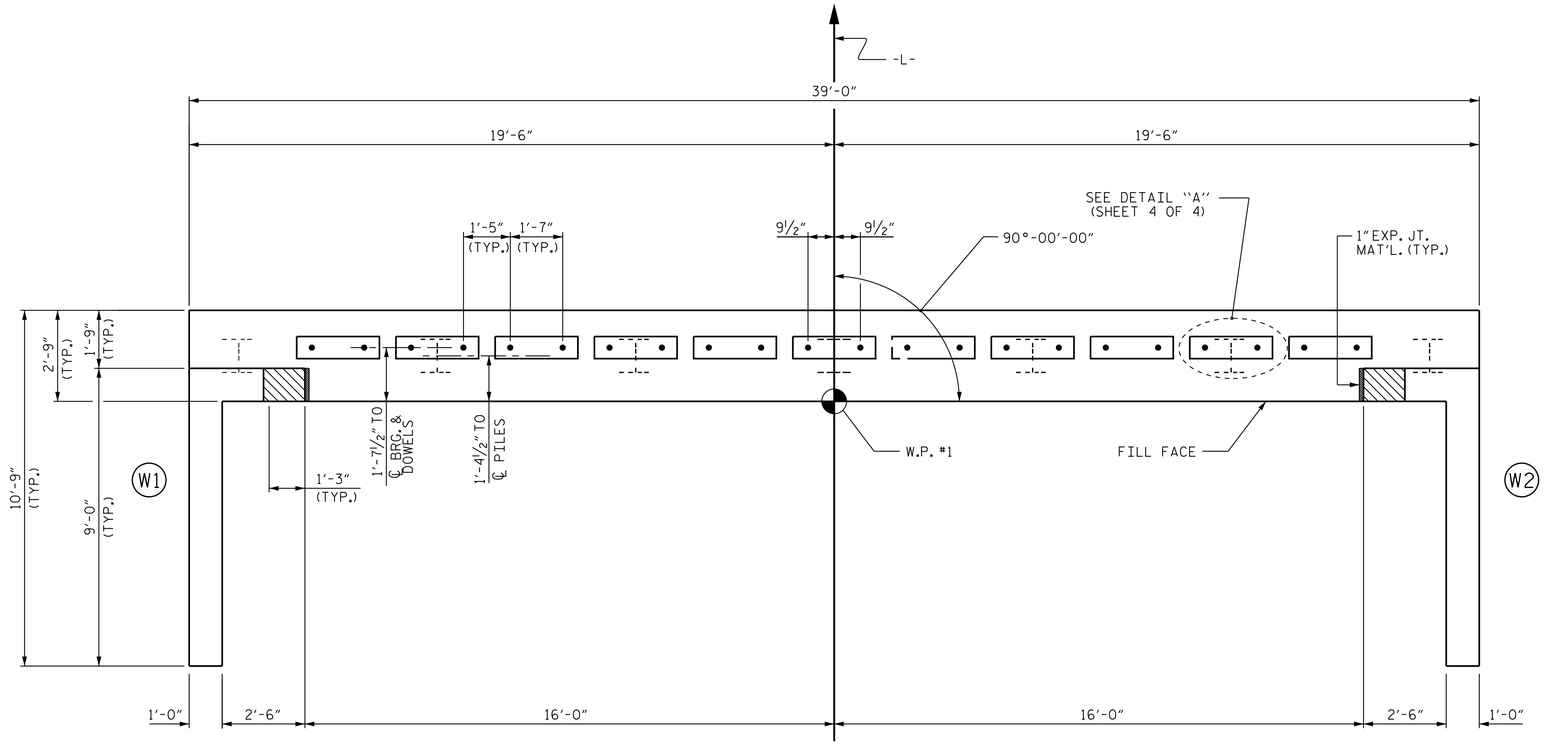
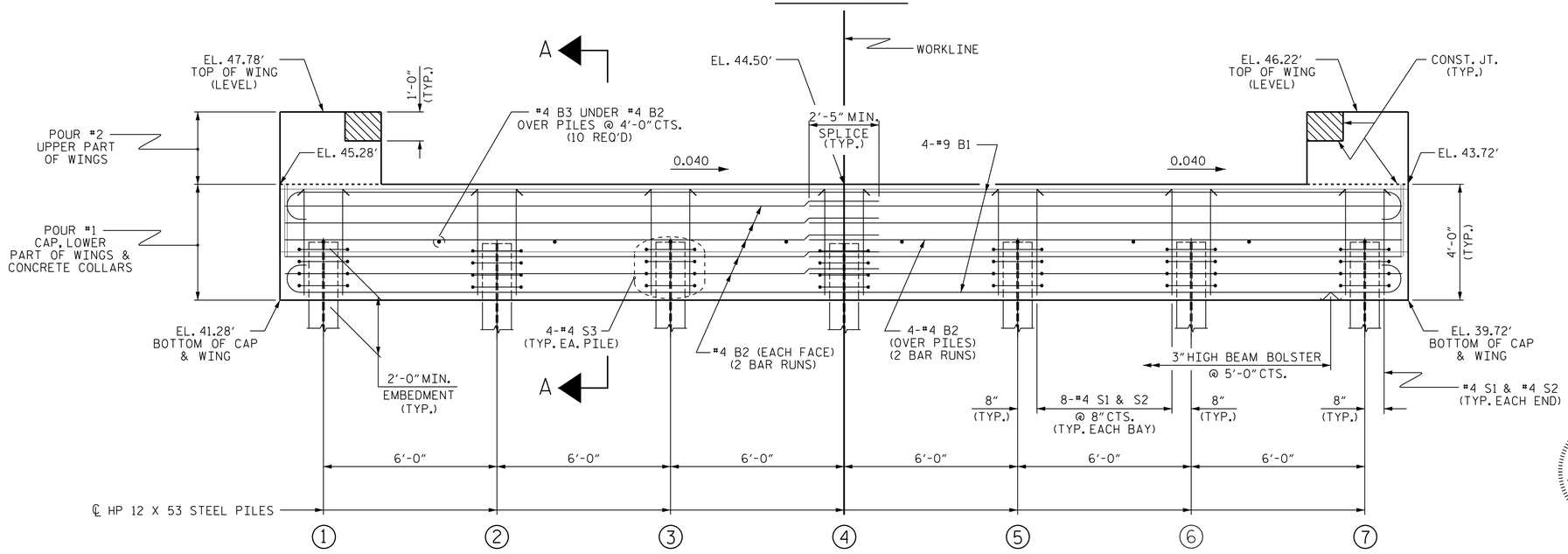


PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
1	43.22'
2	42.98'
3	42.74'
4	42.50'
5	42.26'
6	42.02'
7	41.78'

PROJECT NO. 17BP.2.R.78
LENOIR COUNTY
STATION: 13+60.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
Authorized by: Andrew Phillips
2/13/2018

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ASSEMBLED BY : JJ. KIMBLE		DATE : 12/17	
CHECKED BY : A.L. PHILLIPS		DATE : 12/17	
DRAWN BY : WJH	12/11	REV. 4/15 MAA/TMG	
CHECKED BY : AAC	12/11		

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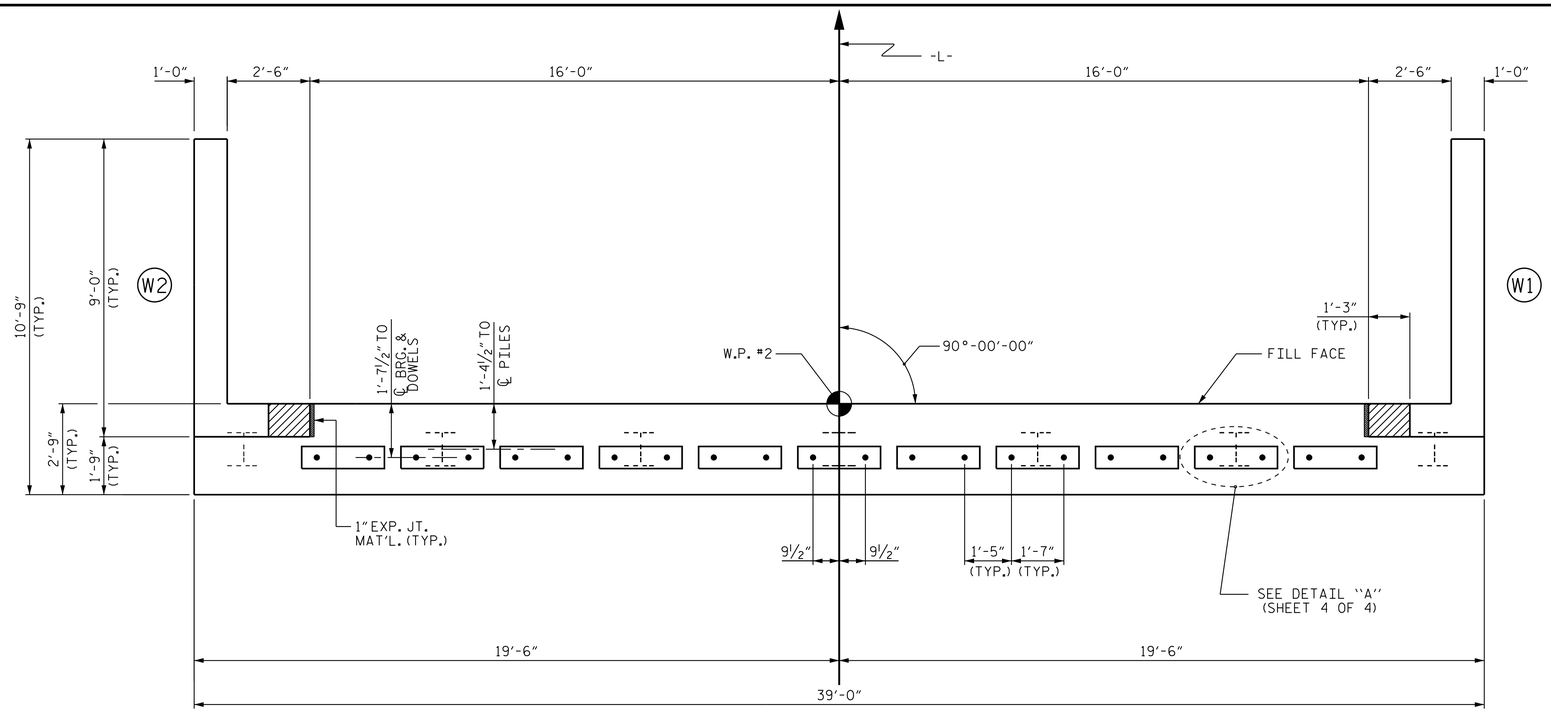
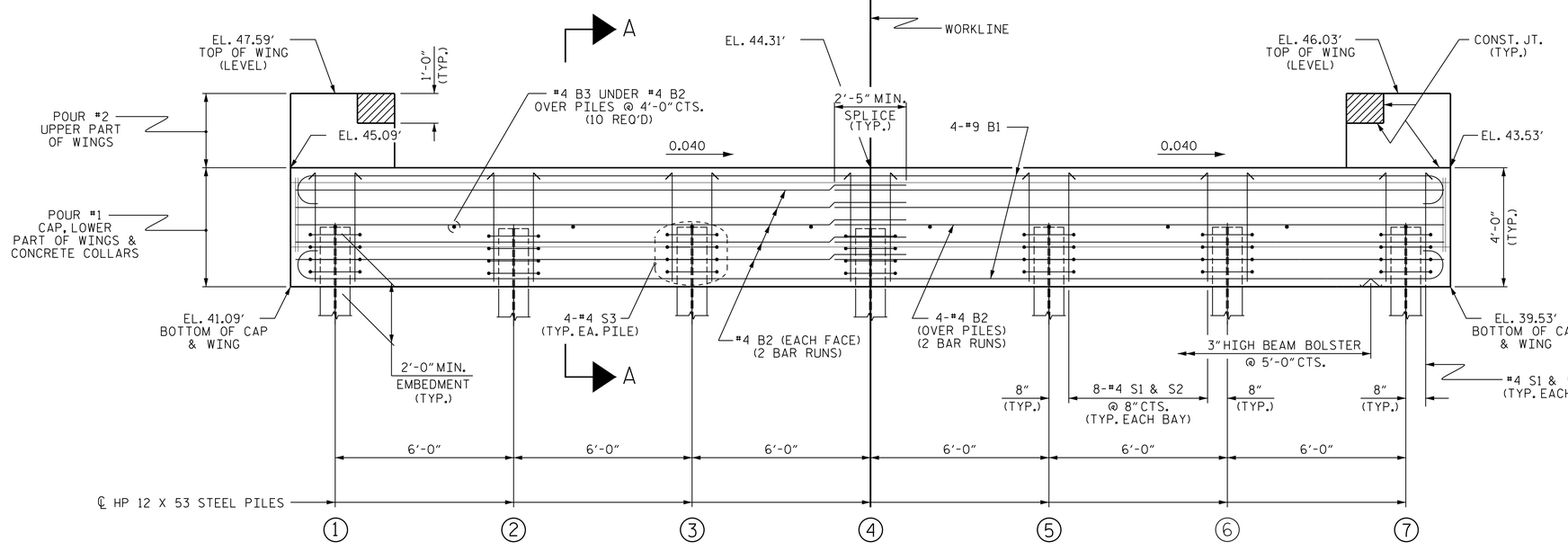
STD. NO. EB_33_90S4



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS

1	43.03'
2	42.79'
3	42.55'
4	42.31'
5	42.07'
6	41.83'
7	41.59'

PROJECT NO. 17BP.2.R.78
LENOIR COUNTY
STATION: 13+60.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
Docusigned by: Andrew Phillips 2/13/2018

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Phone (919) 677-2000 NC LICENSE # P-0102

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2			4			19

ASSEMBLED BY :	J.J. KIMBLE	DATE :	12/17
CHECKED BY :	A.L. PHILLIPS	DATE :	12/17
DRAWN BY :	WJH 12/11	REV. 4/15 MAA/TMG	
CHECKED BY :	AAC 12/11		

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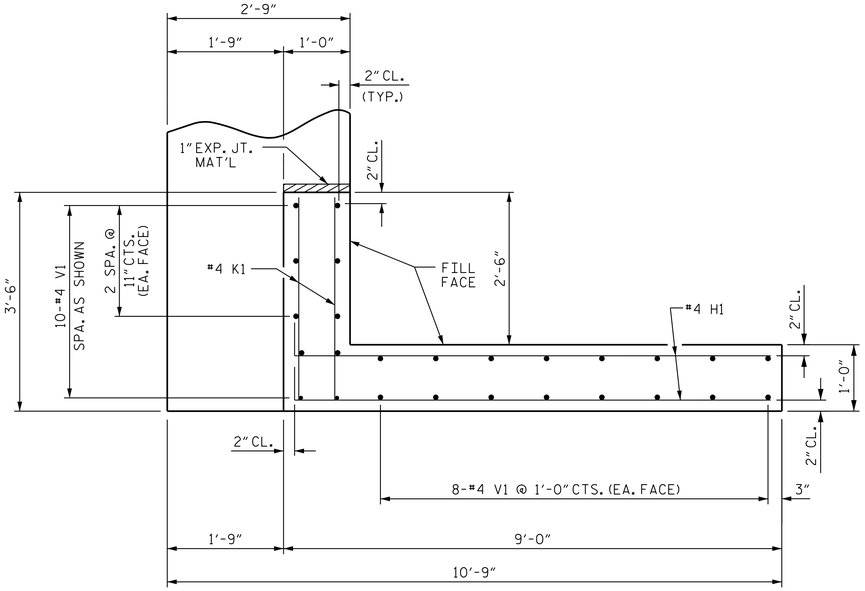
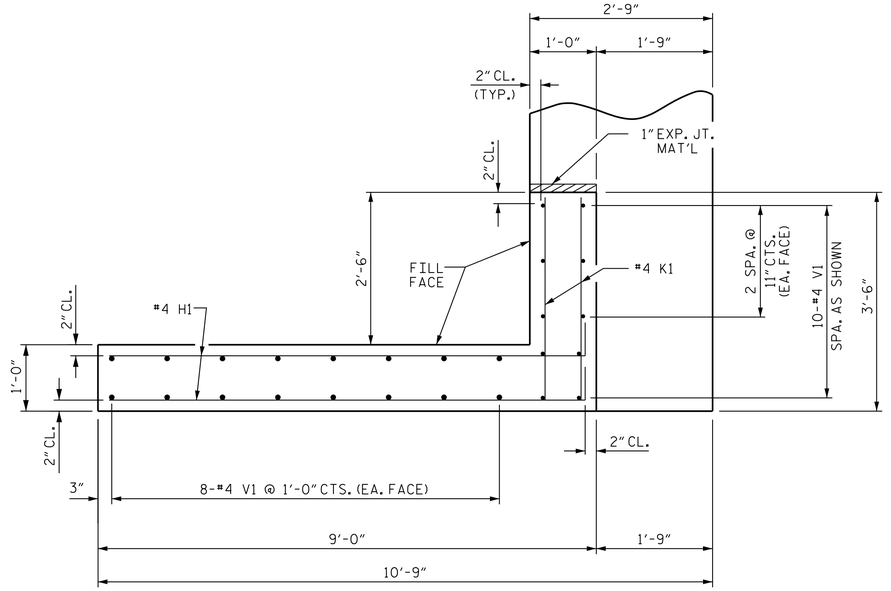
2/1/2018

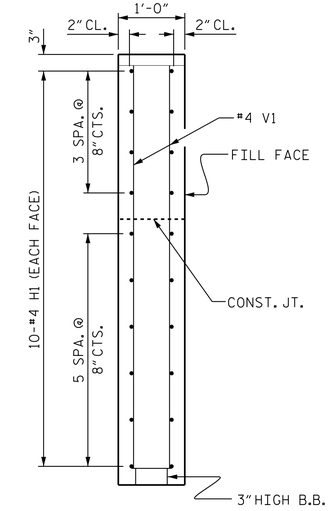
STD. NO. EB_33_90S4



PLAN OF WING (W1)

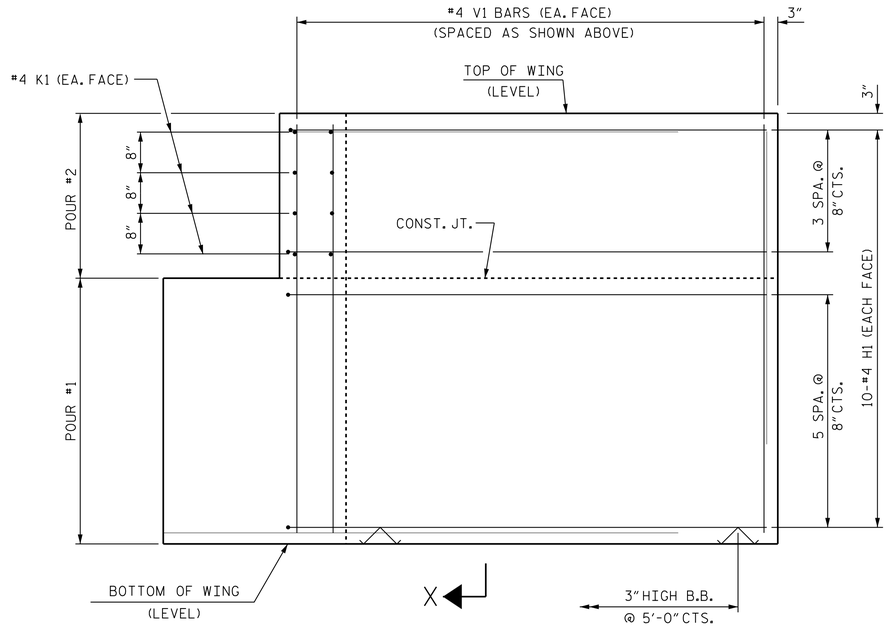


PLAN OF WING (W2)

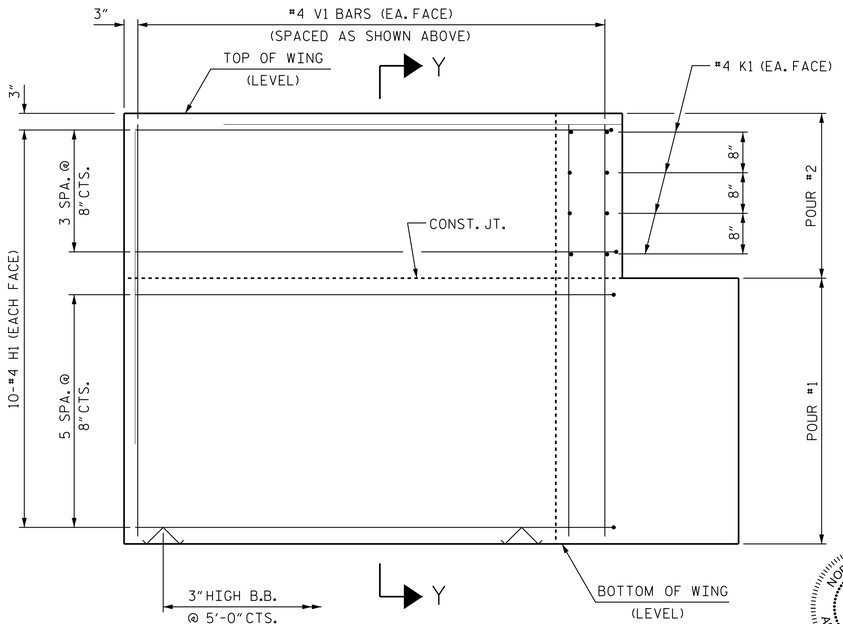


SECTION X-X

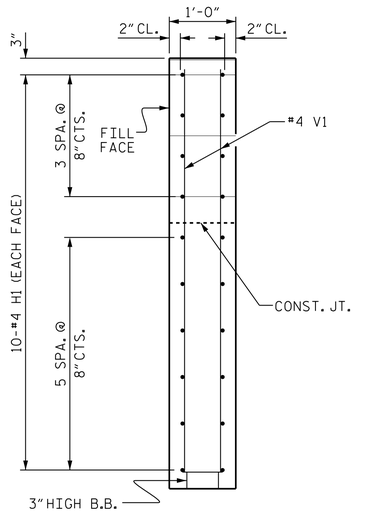
X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS						SHEET NO.
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2			4			19

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Digitally signed by: Andrew Phillips
2/13/2018

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CHECKED BY : A.L. PHILLIPS	DATE : 12/17		
DRAWN BY : WJH 12/11	REV. 4/15 MAA/TMG		
CHECKED BY : AAC 12/11			

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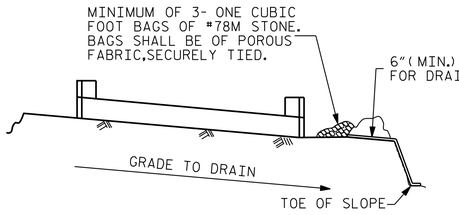
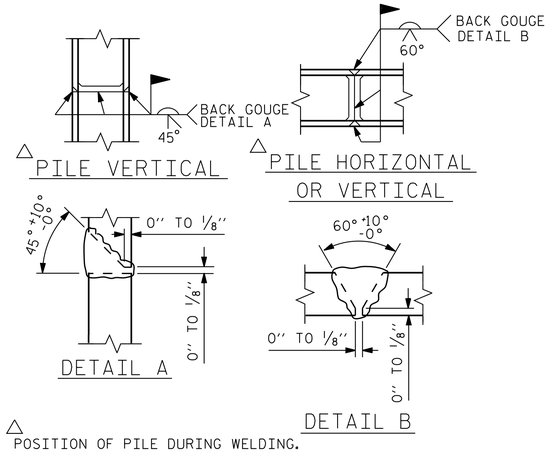


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

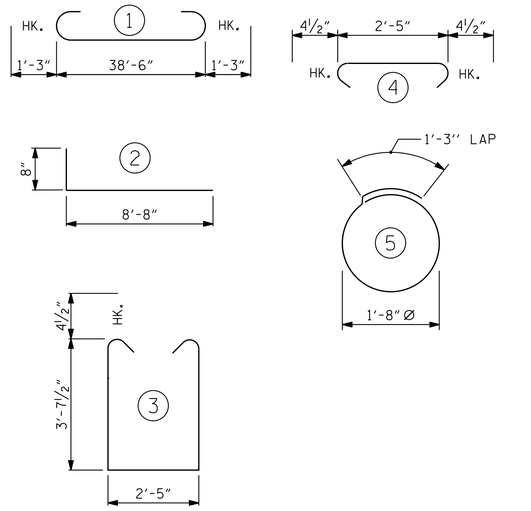
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1	END BENT 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 350	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 350
PILE REDRIVES NO: 4	PILE REDRIVES NO: 4
PILE DRIVING EQUIPMENT SETUP NO: 7	PILE DRIVING EQUIPMENT SETUP NO: 7

BILL OF MATERIAL

FOR ONE END BENT

(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	3'-1"	33
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122
V1	52	#4	STR	6'-2"	214

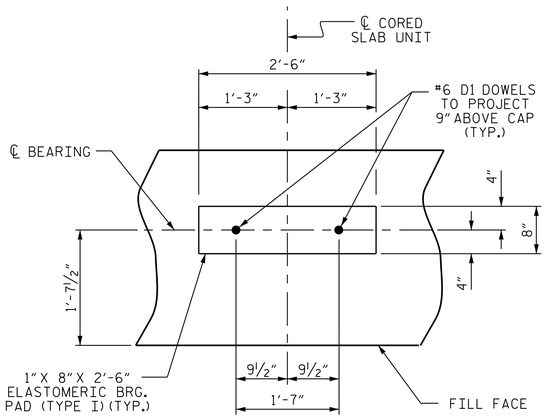
REINFORCING STEEL 2638 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 19.5 C.Y.

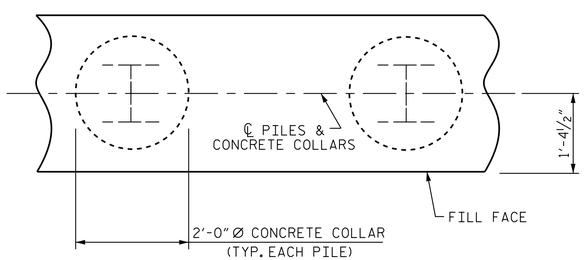
POUR #2 UPPER PART OF WINGS 2.1 C.Y.

TOTAL CLASS A CONCRETE 21.6 C.Y.

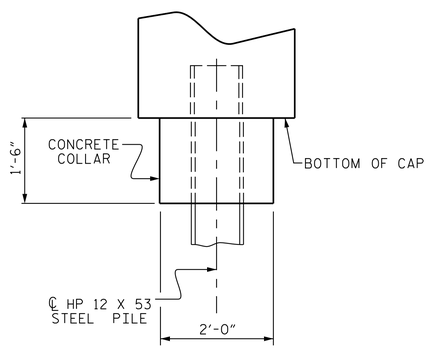


DETAIL ''A''

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



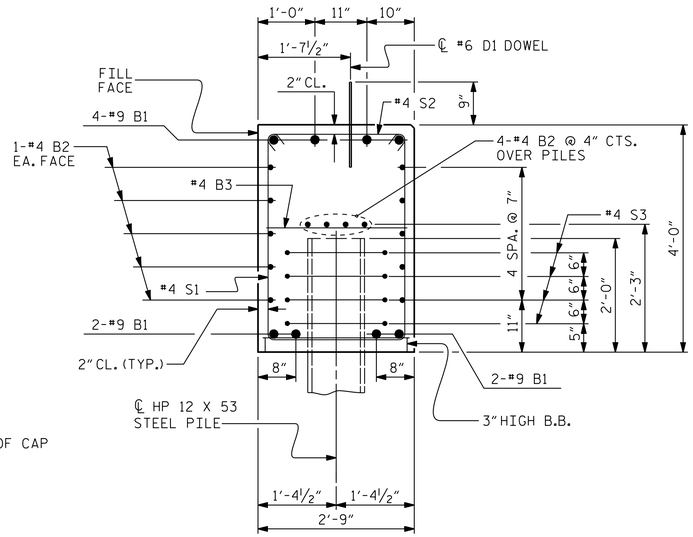
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE ''CORROSION PROTECTION FOR STEEL PILES DETAIL.'')

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1 & 2
DETAILS

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ASSEMBLED BY : JJ. KIMBLE	DATE : 12/17		
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DRAWN BY : WJH 12/11	REV. 4/17 MAA/THC		
CHECKED BY : AAC 12/11			

2/1/2018

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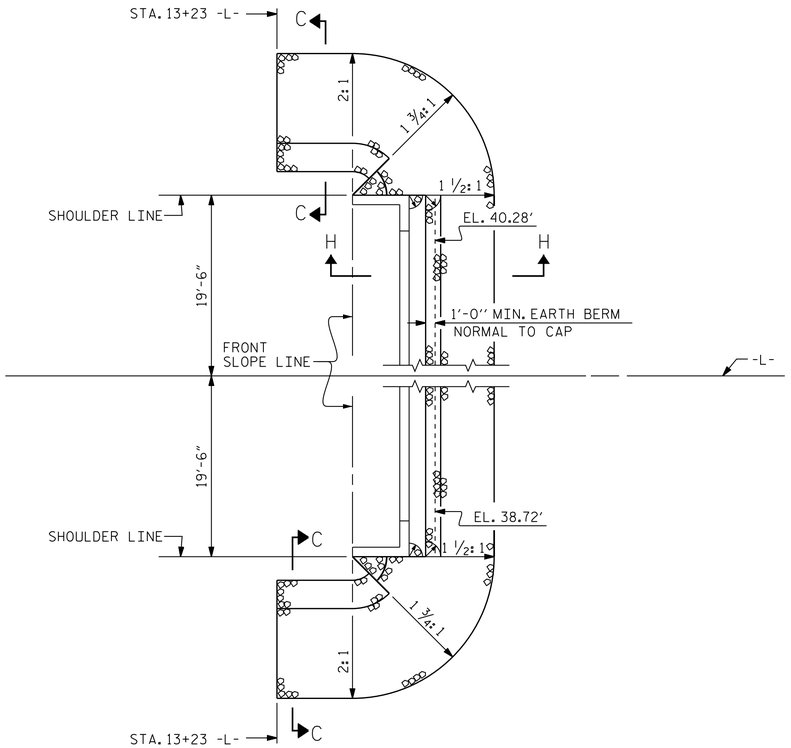
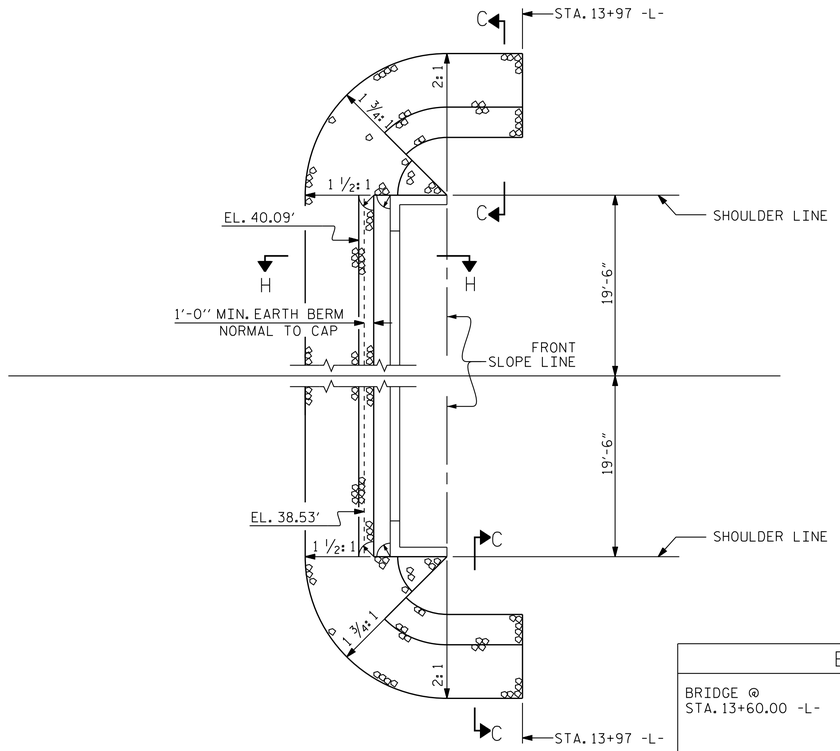
STD. NO. EB_33_90S4



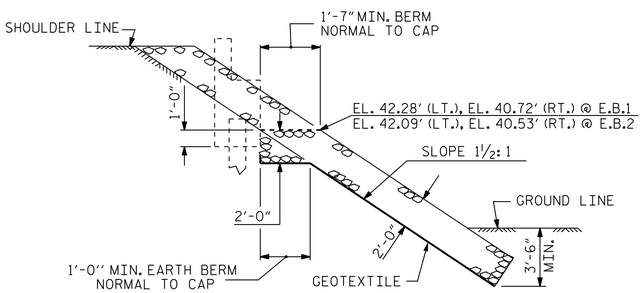
END BENT 1



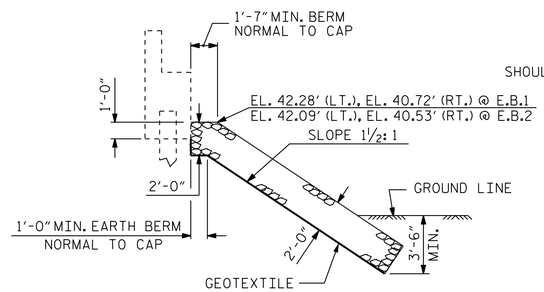
END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+60.00 -L-	RIP RAP CLASS II (2′-0″ THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	52	58
END BENT 2	64	71

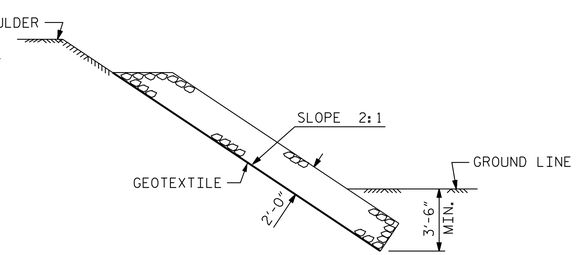
PLAN OF RIP RAP



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.2.R.78
LENOIR COUNTY
STATION: 13+60.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew Phillips 2/13/2018

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2			4			19

ASSEMBLED BY : J.J. KIMBLE	DATE : 12/17		
CHECKED BY : A.L. PHILLIPS	DATE : 12/17		
DRAWN BY : REK 1/84	REV. 5/1/06R	TLA/GM	
CHECKED BY : RDU 1/84	REV. 10/1/11	MAA/GM	
	REV. 12/21/11	MAA/GM	

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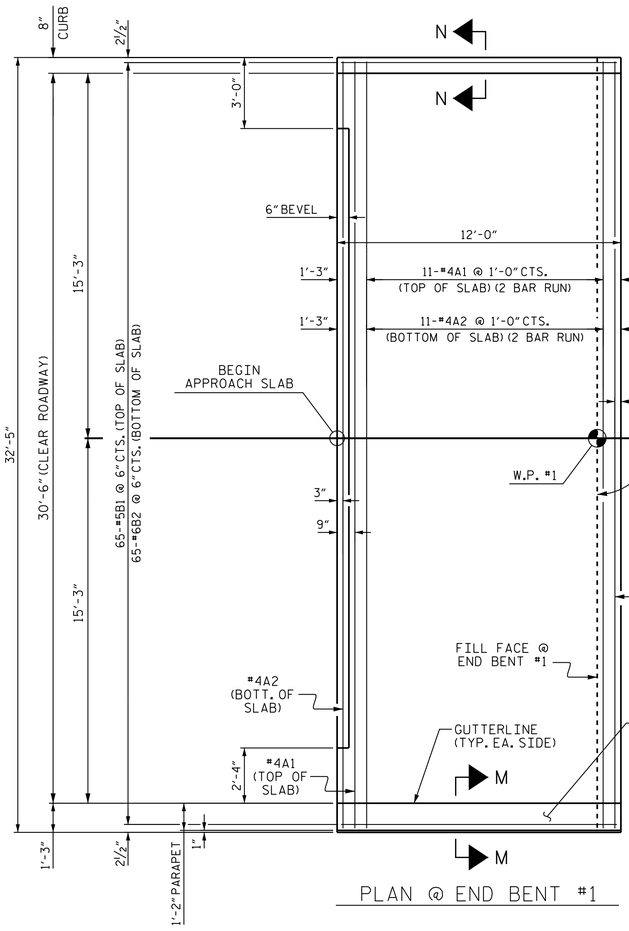
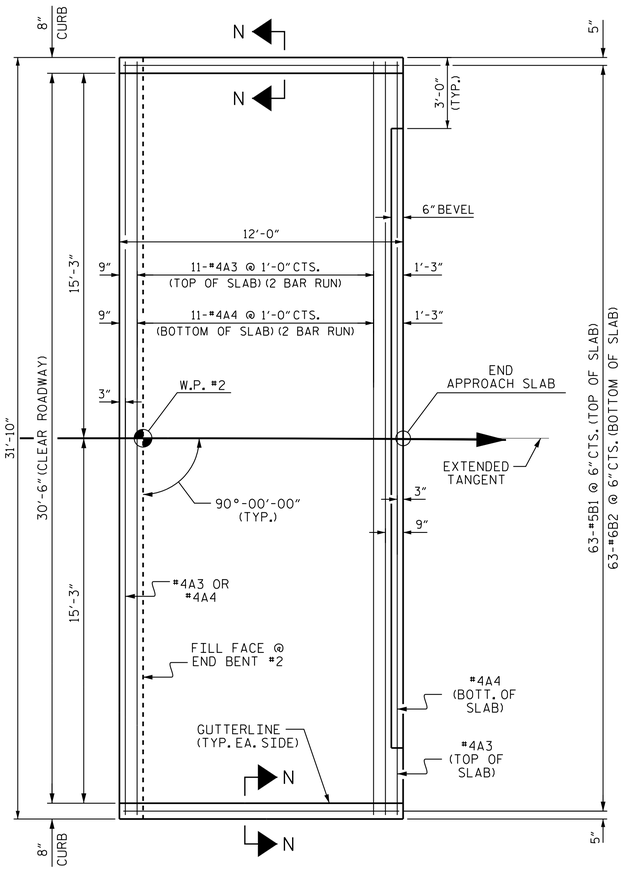
STD. NO. RR1

2/1/2018 K:\RDT_Structures_Bridge\NC\0110363?9 - Div 2 Bridge 55\Cad\Dgn\16-17BP.2.R.78_D1V02_RR01_530055.dgn

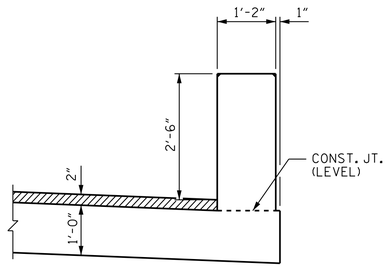


PLAN @ END BENT #1

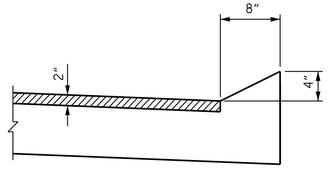


PLAN @ END BENT #2

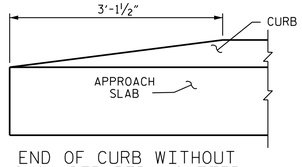
PLAN APPROACH SLABS



SECTION M-M



SECTION N-N



END OF CURB WITHOUT
SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB
FOR PRESTRESSED
CONCRETE CORED SLABS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
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Kimley»Horn
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NC LICENSE # F-0102

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ASSEMBLED BY :	J.J. KIMBLE	DATE :	12/17
CHECKED BY :	A.L. PHILLIPS	DATE :	12/17
DRAWN BY :	SHS/MAA 5-09	REV. 12-17	MAA/THC
CHECKED BY :	BCH 5-09		

2/1/2018

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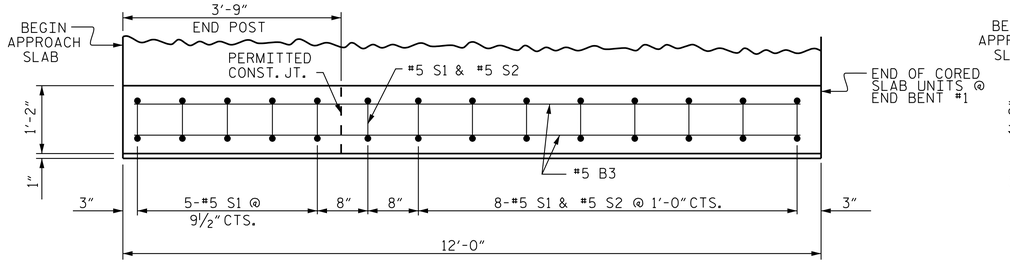
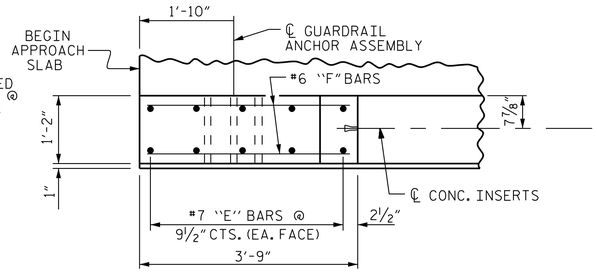
NOTES

FOR EXPANSION JOINT DETAILS, SEE SHEET S-10.

FOR CONCRETE PARAPET AND END POST BILL OF MATERIALS AND OTHER DETAILS, SEE SHEET S-19.

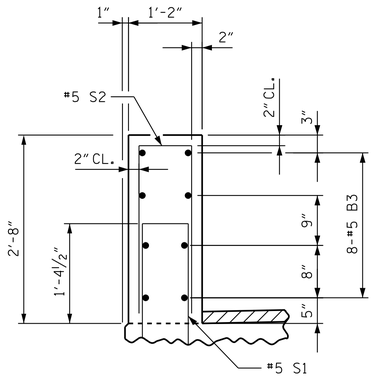


PLAN OF PARAPET

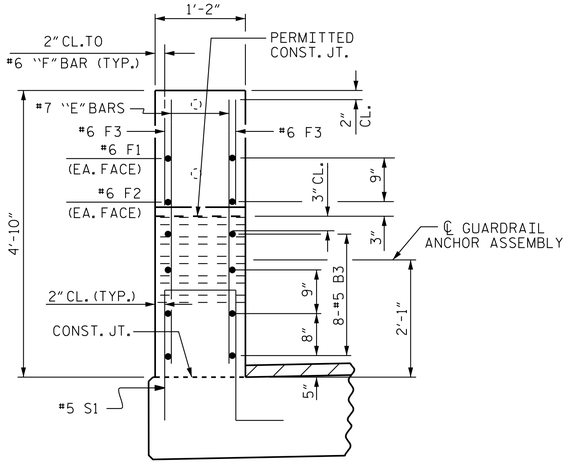


PLAN OF END POST

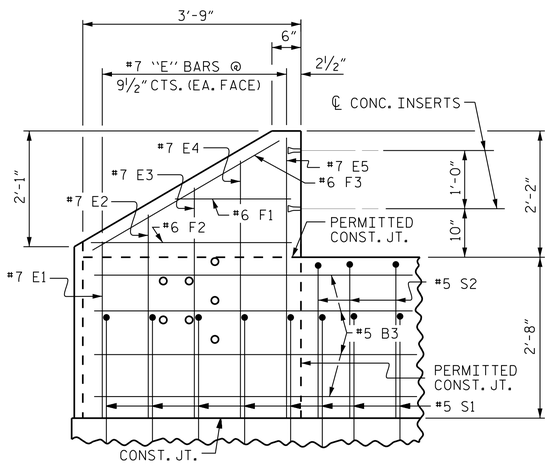
PLAN OF PARAPET AND END POST FOR TWO BAR RAIL



CONCRETE PARAPET SECTION



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS FOR FLEXIBLE PAVEMENT WITH CONCRETE PARAPET

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			19

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2/13/2018

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DRAWN BY: J.I. KIMBLE	DATE: 12/17	
CHECKED BY: S.A. DENNEY	DATE: 12/17	
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE: 12/17	

2/1/2018

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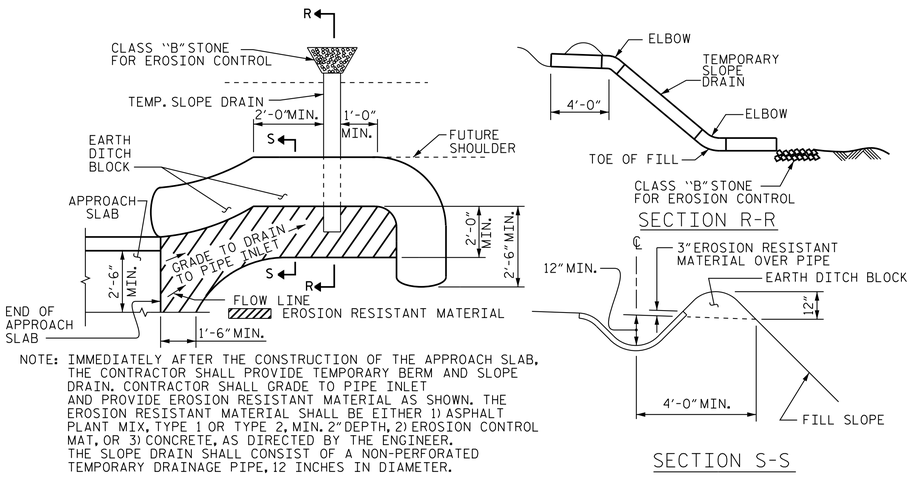
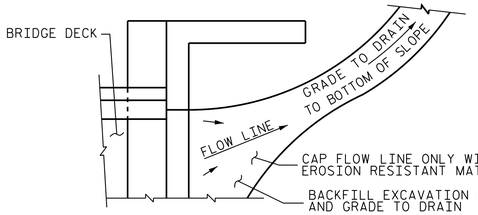


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW

SECTION R-R

SECTION S-S



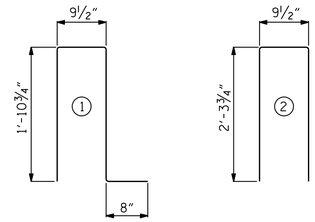
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

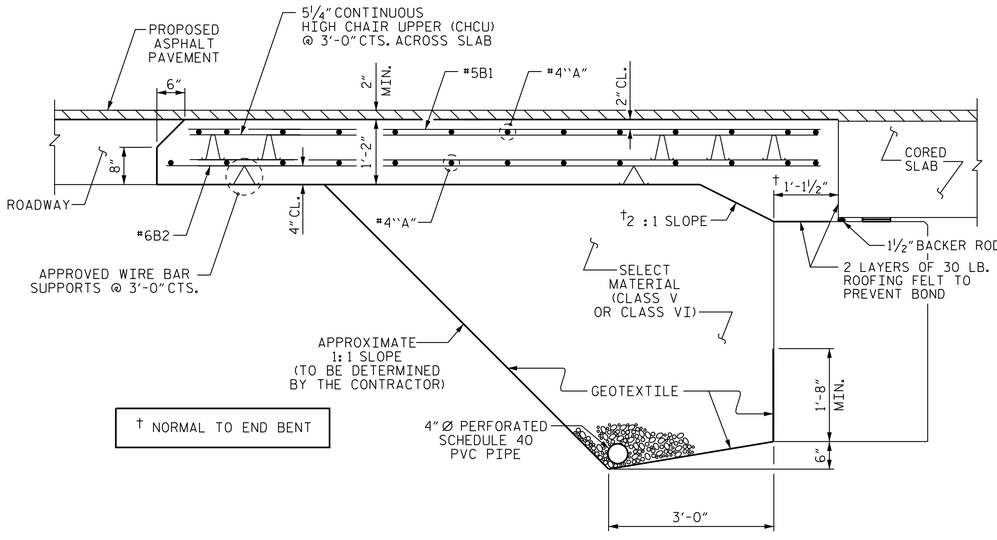
BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	26	#4	STR	17'-1"	297
A2	26	#4	STR	16'-11"	294
✳ B1	65	#5	STR	11'-2"	757
B2	65	#6	STR	11'-8"	1139
✳ B3	8	#5	STR	11'-7"	97
✳ E1	2	#7	STR	2'-8"	11
✳ E2	2	#7	STR	3'-2"	13
✳ E3	2	#7	STR	3'-8"	15
✳ E4	2	#7	STR	4'-2"	17
✳ E5	2	#7	STR	4'-6"	18
✳ F1	2	#6	STR	1'-9"	5
✳ F2	2	#6	STR	2'-11"	9
✳ F3	2	#6	STR	3'-3"	10
✳ S1	14	#5	1	5'-3"	77
✳ S2	9	#5	2	5'-5"	51
REINFORCING STEEL				LBS.	1433
✳ EPOXY COATED REINFORCING STEEL				LBS.	1377
CLASS AA CONCRETE					
POUR #1 - SLAB & CURB				C.Y.	18.4
POUR #2 - PARAPET				C.Y.	1.6
TOTAL				C.Y.	20.0
CONCRETE PARAPET				LIN.FT.	12.0

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	26	#4	STR	16'-9"	291
A4	26	#4	STR	16'-8"	289
✳ B1	63	#5	STR	11'-2"	734
B2	63	#6	STR	11'-8"	1104
REINFORCING STEEL				LBS.	1393
✳ EPOXY COATED REINFORCING STEEL				LBS.	1025
CLASS AA CONCRETE				C.Y.	18.2



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

PROJECT NO. 17BP.2.R.78

LENOIR COUNTY

STATION: 13+60.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			19

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Electronically signed by: Andrew Phillips
2BB69ABAD4004D3...
2/13/2018

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ASSEMBLED BY : JJ. KIMBLE	DATE : 12/17		
CHECKED BY : A.L. PHILLIPS	DATE : 12/17		
DRAWN BY : SHS/MAA 5-09	REV. 12-17	MAA/THC	
CHECKED BY : BCH 5-09			

2/1/2018

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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞"Ø SHEAR STUDS FOR THE ¾"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞"Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾"Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM REV. 12-17 MAA (/) THC